

(4) Financing Plans

The plans are identical to those of the water supply (Refer to Table 11.1.13).

(5) Investigation on Profitability

The computation results under the assumed conditions are listed in the below table (P/L Statement and Cashflow Table are shown in Appendix V.7). The estimated sewage charge for both Cases are much higher, and financial support will be necessary.

Table 11.1.16 Sewage Charge and the IRR

	Sewage Charge (Rs/m ³)	ROI(b/tax)	ROI(a/tax)	ROE(b/tax)	ROE(a/tax)
Case-A1	10.63	12.3 %	9.6 %	5.5 %	3.9 %
Case-A2	13.16	15.3	12.2	5.8	4.1
Case-B1	8.78	11.8	9.2	5.5	3.9
Case-B2	10.66	15.2	12.1	5.6	4.0

11.1.7 Residential Facility

(1) Estimation of Rent

The residential buildings will be constructed by the real estate developers who will also purchase the necessary land. The derived price of rent is to recover the initial investment costs under the assumed conditions of identical financing plans as those of water supply and sewage, and the results are listed in the below table (Refer to Appendices V.8 to V.11). For the rent estimation, the unit price of land at Rs 1,515/m² (US\$ 50/m²) is used. The construction schedule of housing is listed in Tables 11.1.1 and 11.1.2, and two years are assumed for construction of each housing.

Table 11.1.17 Rent of Residential Housing

	(Unit; Rs/room/month)			
	High Density (4F)	High Density (10F)	Middle Density	Housing for EWS
Case-A1	1,643	9,389	13,672	2,130
Case-A2	1,918	11,584	15,603	2,435
Case-B1	1,606	9,305	13,233	1,990
Case-B2	1,866	11,403	15,113	2,360

(2) Investigation of Feasibility

(a) High-Density Housing (4-storied apartments for single employees) / Housing for EWS

The above listed rent is significantly lower than the average monthly wage of operators (about Rs 8,000). The wage of the young single employee is lower than the average but can afford the rent and other minor payments on maintenance if the room is shared by two employees which makes the monthly rent Rs 800-950/resident. Housing for the EWS (economically weaker section) is to solve the problems of slum and is not intended to receive rent payments. If the expenses from the EWS housing are to be covered by rent collected from the single residents and that there are 5,000 rooms for single residents and 1,000 rooms for the EWS, the monthly rent will range from Rs 2,004 (Case-B2) to the most expensive Rs 2,405 (Case-A2). Construction and operation of housing for the EWS by housing rent from single residents is well feasible, assuming the room is shared by two residents.

(b) High-Density Housing (10-storied apartments) / Middle-Density Housing

The rent of 10-storied high-density housing (80 m²/household) and of middle-density housing (100 m²/household) with more floor area will be expensive and cannot be leased to operators of the firms in the IMT.

(3) Investigation on Implementation Organization

As mentioned in Section 7-4, construction of housing facilities can be handled by either the local governmental agencies or private firms. The development of housing is very active in India by both public and private firms, but most of housing is for sale because of higher recovery rate on investment and the revenue can be used for further development. There is no need for the local governmental agencies to take role in the development of 10-storied apartments and medium-density housing which will have to be sold instead of leased. From the amount of costs involved, the 10-storied apartments and medium-density housing are to be consigned to private firms though the local governmental agencies will make the final decision. Housing for single employees and the EWS is to be constructed and operated by the local governmental agencies to provide housing to the IMT employees at reasonable price. The costs involved in housing per household including land and assuming zero interest are listed below:

• High-density housing (4 stored)	:	165,900 Rs (5,475 US\$)
• High-density housing (10 stored)	:	895,917 Rs (29,565 US\$)
• Middle-density housing	:	1,400,200 Rs (46,207 US\$)
• Housing for EWS	:	217,900 Rs (7,191 US\$)

11-1-8 Profitability of the Total Project

(1) Method of Evaluation

The profitability of the total project including development of land, infrastructure such as electricity, water supply and sewage, and social infrastructure is studied from the below reasons:

- This project is intended to support the growth of domestic firms by development of the IMT with infrastructure at international levels to promote foreign investments and transfer of foreign technology. It is important to evaluate the profitability of site development and construction of various infrastructure.
- The profitability of commercial facilities consigned to private firms will not be included in the profitability of the IMT. This condition is identical to not including the profitability of individual firms in the IMT.

(2) Revenue

The revenue of this project is from sales of land, electricity, water supply and wastewater treatment and from rent of residential housings and others.

(a) Land

The income to this project related to land is from land portions sold to outside investors / developers only. Sales of land for industrial estate, commercial facilities, 10-storied high density, medium and low density housings will be the income. The unit selling price of land is assumed as US\$ 50/m².

(b) Electricity

All of the sold electricity will be the income. Electricity consumed by the town facilities will be deducted as an expense which is described later. The unit selling price of electricity is assumed as Rs 2.1/kWh referring to the price of the HSEB.

(c) Water Supply

All of the sold quantity of water will be the income. Water consumed by the town facilities will be deducted as an expense. The unit selling price of water is assumed as Rs 2.5/m³ which is the current price of industrial water.

(d) Wastewater Treatment

The same is also applicable to the quantity of treated wastewater. The unit price is assumed as Rs 1.25/m³ which is half of the water supply price.

(e) Rent of Residential Housings

The monthly rent collected from 4-storied apartments for single residents will be 2,100 Rs per household. The rent of housings for the EWS is set at zero in this study.

(f) Others

The annual income from the Training Center and the Seminar House is assumed as 10% of the construction costs or Rs 8.50 million and 7.08 million, respectively.

(g) Total Revenue

The total is summarized in Tables 11.1.18 and 11.1.19.

(3) Operating, Maintenance, and Management Expenses

The same expenses used for the profitability study of the individual items (land sale, power supply, water supply and sewage treatment) will be applied. For the town facilities, the expenses are estimated from the projected number of employees and costs of utilities and maintenance. The number of employees are assumed as below, and the average monthly expense per employee is estimated at 5,000 Rs (8,000 Rs for faculty members).

-Town Center	:	750
-Community Center	:	30
-Primary and Middle School	:	80
-Police and Fire Station	:	180
-Training Center	:	40
-Seminar House	:	10

(1/2)

Table 11.1.18 Revenue and Operating Expense of the IMT (Case-A)

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Revenue																		
Land Sales	0.0	0.0	0.0	404.5	404.5	404.5	404.5	404.5	404.5	404.5	404.5	404.5	404.5	0.0	0.0	0.0	0.0	0.0
Industrial Area	0.0	0.0	0.0	109.1	0.0	218.2	0.0	0.0	109.1	0.0	109.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
High Density Housing (IOF)	0.0	0.0	0.0	118.2	0.0	236.3	0.0	0.0	118.2	0.0	118.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Density Housing	0.0	0.0	0.0	60.6	0.0	121.2	0.0	0.0	60.6	0.0	60.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Low Density Housing	0.0	0.0	0.0	0.0	0.0	166.7	0.0	143.9	0.0	0.0	53.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Commercial Facilities	0.0	0.0	0.0	692.4	571.2	980.2	404.5	548.4	692.4	404.5	745.4	404.5	404.5	0.0	0.0	0.0	0.0	0.0
Sub-total	0.0	0.0	0.0	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2
Electricity	0.0	0.0	0.0	0.0	0.0	4.3	8.5	13.6	16.8	20.7	24.8	28.1	32.5	35.8	39.0	39.0	39.0	39.0
Water Supply	0.0	0.0	0.0	0.0	0.0	2.2	4.3	6.8	8.4	10.3	12.4	14.0	16.2	17.9	19.5	19.5	19.5	19.5
Waste Water Treatment	0.0	0.0	0.0	0.0	0.0	25.2	25.2	75.6	75.6	75.6	100.8	100.8	126.0	126.0	126.0	126.0	126.0	126.0
Housing Rental	0.0	0.0	0.0	0.0	0.0	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Training Center	0.0	0.0	0.0	0.0	0.0	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Seminar House	0.0	0.0	0.0	0.0	0.0	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Total	0.0	0.0	0.0	692.4	2,605.4	3,061.7	2,492.3	2,694.2	2,843.0	2,560.9	2,933.2	2,597.2	2,629.0	2,229.4	2,234.3	2,234.3	2,234.3	2,234.3
Operation Cost																		
Land Sales	0.0	0.0	0.0	13.8	11.4	19.6	8.1	11.0	13.8	8.1	14.9	8.1	8.1	0.0	0.0	0.0	0.0	0.0
Power Supply	0.0	0.0	0.0	0.0	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6
Water Supply	0.0	0.0	0.0	0.0	0.0	5.0	9.8	15.6	19.3	23.7	28.5	32.3	37.3	41.1	44.8	44.8	44.8	44.8
Waste Water Treatment	0.0	0.0	0.0	0.0	0.0	5.7	11.2	17.8	22.1	27.2	32.6	36.9	42.7	47.0	51.3	51.3	51.3	51.3
Town Center for Public Service	0.0	0.0	0.0	0.0	0.0	0.0	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1
Community Center for Residents	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Primary and Middle School	0.0	0.0	0.0	0.0	0.0	0.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Police Station / Fire Station	0.0	0.0	0.0	0.0	0.0	0.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Training Center	0.0	0.0	0.0	0.0	0.0	0.0	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Seminar House	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Total	0.0	0.0	0.0	13.8	1,276.1	1,294.9	1,406.3	1,421.6	1,432.5	1,436.3	1,453.3	1,454.5	1,465.4	1,465.3	1,473.4	1,473.4	1,473.4	1,473.4

Table 11.1.18 Revenue and Operating Expense of the IMT (Case-A)

	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
(Unit: Rs. Million)																	
Revenue																	
Land Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4,045.1
Industrial Area	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	545.4
High Density Housing (10F)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	590.9
Middle Density Housing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.0
Low Density Housing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	363.6
Commercial Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,847.9
Sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61,026.9
Electricity	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2
Water Supply	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	965.4
Waste Water Treatment	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	482.7
Housing Rental	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	3,250.8
Training Center	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	246.4
Seminar House	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	205.3
Total	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	72,025.4
Operation Cost																	
Land Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	117.0
Power Supply	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	37,939.4
Water Supply	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	44.8	1,109.1
Waste Water Treatment	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	1,268.1
Town Center for Public Service	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	1,655.5
Community Center for Residents	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	131.1
Primary and Middle School	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	573.4
Police Station / Fire Station	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	406.8
Training Center	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	245.5
Seminar House	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	141.3
Total	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	1,473.4	43,587.1

(1/2)

Table 11.1.19 Revenue and Operating Expense of the IMT (Case-B)

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Revenue																			
Land Sales	0.0	0.0	0.0	809.0	809.0	809.0	809.0	809.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Industrial Area	0.0	0.0	0.0	218.2	0.0	327.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
High Density Housing (10F)	0.0	0.0	0.0	236.3	0.0	354.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Middle Density Housing	0.0	0.0	0.0	121.2	0.0	181.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Low Density Housing	0.0	0.0	0.0	219.7	0.0	143.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Commercial Facilities	0.0	0.0	0.0	1,384.7	1,028.7	1,672.6	809.0	809.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub-total	0.0	0.0	0.0	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2
Electricity	0.0	0.0	0.0	0.0	0.0	8.5	16.2	25.4	32.5	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0
Water Supply	0.0	0.0	0.0	0.0	0.0	4.2	8.1	12.7	16.2	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5
Waste Water Treatment	0.0	0.0	0.0	0.0	0.0	50.4	50.4	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0
Housing Rental	0.0	0.0	0.0	0.0	0.0	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Training Center	0.0	0.0	0.0	0.0	0.0	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Seminar House	0.0	0.0	0.0	0.0	0.0	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1
Total	0.0	0.0	0.0	1,384.7	3,062.9	3,785.5	3,077.4	3,022.9	2,224.5	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3
Operation Cost																			
Land Sales	0.0	0.0	0.0	27.7	20.6	33.5	19.1	16.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power Supply	0.0	0.0	0.0	0.0	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6
Water Supply	0.0	0.0	0.0	0.0	0.0	7.8	14.9	23.4	30.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Waste Water Treatment	0.0	0.0	0.0	0.0	0.0	11.2	21.2	33.3	42.7	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3
Town Center for Public Service	0.0	0.0	0.0	0.0	0.0	0.0	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1
Community Center for Residents	0.0	0.0	0.0	0.0	0.0	0.0	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
Primary and Middle School	0.0	0.0	0.0	0.0	0.0	0.0	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
Police Station / Fire Station	0.0	0.0	0.0	0.0	0.0	0.0	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Training Center	0.0	0.0	0.0	0.0	0.0	0.0	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8
Seminar House	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Total	0.0	0.0	0.0	27.7	1,285.2	1,317.1	1,432.5	1,450.2	1,449.9	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5

Table 11.1.19 Revenue and Operating Expense of the IMT (Case-B)

	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	Total
(Unit: Rs Million)																	
Revenue																	
Land Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4,045.1
Industrial Area	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	545.4
High Density Housing (10F)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	590.9
Middle Density Housing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.0
Low Density Housing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	363.6
Commercial Facilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,847.9
Sub-total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	61,026.9
Electricity	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	2,034.2	20,342.2
Water Supply	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	390.0
Waste Water Treatment	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.5	195.0
Housing Rental	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	1,260.0
Training Center	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	85.0
Seminar House	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	71.0
Total	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	2,234.3	22,343.3
Operation Cost																	
Land Sales	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	117.0
Power Supply	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	1,264.6	12,646.6
Water Supply	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	360.0
Waste Water Treatment	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	51.3	513.0
Town Center for Public Service	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	59.1	591.0
Community Center for Residents	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	47.0
Primary and Middle School	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	205.0
Police Station / Fire Station	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	145.0
Training Center	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	88.0
Seminar House	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	50.0
Total	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	1,464.5	14,645.5

The annual costs of electricity is obtained from multiplying consumption, a product of 80% of electricity supply shown in Table 7.3.6 and 3,000 hours (8,760 hours for the police and fire stations), with the unit price mentioned above. The unit prices of water supply, sewage and energy of respectively Rs 2.5/m³, Rs 1.25/m³ and Rs 6/10,000 kcal are used. The annual operating days are 365 days for the police and fire stations and 300 days for the others. The annual maintenance expenses are assumed as 1% of construction costs. The results are summarized in Tables 11.1.18 and 11.1.19.

(4) Taxes

As mentioned previously, the power supply is exempt from corporate tax for five years after start-up of operation. This exemption is, however, not considered in this study, for the total profits of this project cannot be categorized.

(5) Financing Plans

The realistic and financially favorable plan (Case-1, Case-1* for the development of land) is applied to each item. The financing plan and repayment terms of Case-A is shown in Appendices V.12 and V.13.

(6) Analysis Results

The computation results under the assumed conditions are summarized in Table 11.1.20. As shown in the attached Profit and Loss Statement (Appendix V.14) and Cashflow Table (Appendix V.15), no cash shortage is observed. The income from sales of land, electricity and housing rent covers shortage from operation of water supply, sewage and town facilities. The obtained IRRs are within the range of project feasibility.

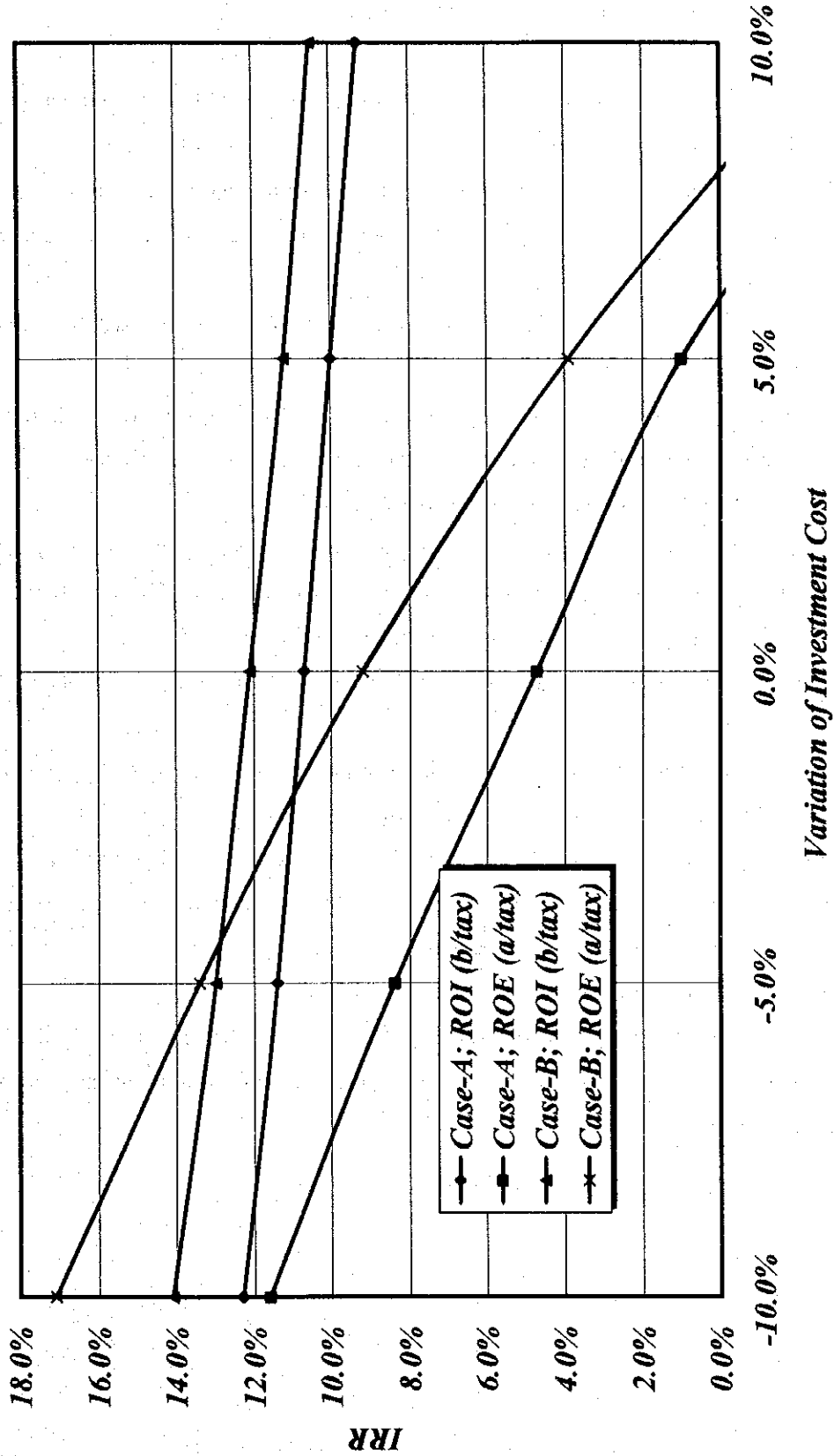
Table 11.1.20. Profitability of the Entire Project

	(Unit; %)			
	ROI (b/tax)	ROI (a/tax)	ROE (b/tax)	ROE (a/tax)
Case-A	10.7	8.1	8.4	4.7
Case-B	12.1	8.7	12.4	9.2

(7) Sensitivity Analysis

The investment costs are varied by -10% to +10% of the base case, and the effect on profitability by changes in investment costs is studied. This project is unable to recover the initial investment if the investment costs increase by 10% (Refer to Figure 11.1.5).

Figure 11.1.5 Sensitivity to Change in Investment Cost



11-1-9 Overall Evaluation

The investigation results can be summarized as below.

- 1) To make the development and sales of land item financially feasible, "The entire acquisition costs of land be covered by equity," and "financing of development costs by foreign financial institutions" are necessary conditions. Finance of foreign governmental financing institutions are not a requirement for implementation because of the similar interest rate to that of foreign commercial financial institutions.
- 2) Supply of electricity is possible at prices similar to that currently used by selling the excess electricity to the HSEB.
- 3) For the water supply and sewage, cash shortage will occur if the prices are similar to those currently used because of lower demand during the initial years of the project. Such shortage can however be offset by partial income from sales of electricity and land.
- 4) Leasing of residential housings to single residents and the EWS is feasible at appropriate rent. Other housings will have to be for sale instead of rent, and the prospective buyers will be those of higher income commuting to Delhi and firms investing in the IMT.
- 5) Operating expenses of other non-profit facilities in the IMT can be covered by income from sales of electricity and land.
- 6) Therefore, this project is financially feasible under the assumed conditions which are the following:
 - The acquisition costs of land are covered by equity.
 - Financing of the development costs is by foreign commercial financial institutions.
 - Financing of the construction costs for electricity and water supply, sewage, residential and other IMT facilities is by foreign public institutions.
 - The sales of land is to be completed within 10 years.
- 7) From the sensitivity analysis, a 10% increase in the base investment costs makes this project unable to recover the initial investment. Thus, it is important to make full use of the funds with the most favorite conditions.

11.2 Economic Evaluation

11.2.1 Basic Objectives

The project will be evaluated from the point of view of regional economy or the domestic economy in India. The economic benefits to the local region and India from construction of the IMT consist of:

(1) Direct Benefits

- Increased value-added from increased industrial production
- Enhanced industrialization
- Transfer of both technology and know-how of management
- Improved technical level of labor
- Improved amenities of the surroundings

(2) Indirect Benefits

- Expanded activities in industry, construction, transport, commercial and other fields (relative effect)
- Improved balance of foreign currencies
- Creation of employment opportunities
- Increased income to the government by taxation
- Improved amenities of the surroundings

The increase in value-added from increased industrial production is the major economic benefit, and the estimation of increased value-added can be measured by specifying appropriate conditions and assumptions. The quantitative analysis will be the increase in value-added representing the major economic benefit in this study. This major economic benefit includes wages and can be analyzed with increased employment opportunities, one of the indirect benefits. Benefits unable to be evaluated quantitatively will be estimated to the furthest extent.

11.2.2 Quantitative Analysis

(1) Estimation of Economic Benefits

The field of industry, size, timing of investment, supply source of raw materials (from domestic supplies or imports, by internal production or outside order) of the firms to the IMT need to be specified for estimation of the increased value-added from increased industrial production as the major economic benefit. As the type of firms to the IMT is currently unknown, reasonable assumptions will be made.

References have to be made also in Japan and ASEAN member countries due to insufficient statistical information on investments and production costs by field of foreign firms in India. The increase in value-added is measured by the below procedure.

(a) Estimation of the Total Value-Added

From Chapter 7, 112 firms representing 24 fields are observed to invest in the IMT. From various methodology for the estimation of value-added, the value-added per each field is determined by multiplying the estimated production of each field with the value-added ratios, obtained from the input-output transactions table of India (Refer to Table 11.2.1). The estimation of production of each field are referred to information on past data of Japanese firms in the ASEAN countries, China, Korea, and India. The classification of fields listed in the input-output transactions table of India differs from the intermediate classification used in this study, and data of the assumed most closely related fields have been used for the estimation of value-added ratios. As an example, data for the field of "electric and electronic instruments" have been assumed as the most closely related field of "precision machinery industry" which is not found in the table. In case of intermediate classification used in this study corresponds to multiple fields in the table, a simple average of the fields has been used.

(b) Estimation of the Annual Value-Added

Not all plants will start production at the same timing due to several years required for the sales of land. The value-added of the IMT is hence assumed to increase with increased number of plants to reach the value (Rs 28,364 million) shown in Table 11.2.1. The annual value-added is estimated from the total value-added and the below assumptions:

- The annual plant site sold during the 10 years from the 3rd year is constant.
- All firms start production after 2 years from the purchase of land.
- Adjusted production (from increase or decrease in capital investments and from market situation) of each plant is not considered.
- As the timing of the 112 firms cannot be estimated, the annual value-added is assumed proportional to the plant site area.

From the assumptions, the value-added during the 5th year becomes 10% of the total, followed by annual increases by 10% to reach the total value-added during the 14th year.

Table 11.2.1 : Projected Increase in Value Added by Increased Industrial Production

Industry	(Unit: Rs Million/year)					
	Rate of Value Added (V.A.) in India*			Output of IMT**		V.A. of IMT
	Industry Code	Gross Output	Gross V.A.	Rate of V.A.		
Manufacturing Industry						
Food, Beverage, Tobacco & Animal Feed	13, 14, 15	161,755.2	25,932.3	16.03%	2,212.1	354.6
Textile and Apparel	16, 17, 18, 19	240,794.4	85,940.4	35.69%	1,060.6	378.5
Furniture and Fixture	21	3,146.8	1,741.5	55.34%	545.5	301.9
Pulp and Paper	22	18,869.4	3,971.3	21.05%	1,757.6	369.9
Publishing and Printing	23	17,593.8	6,582.9	37.42%	909.1	340.1
Chemicals and Allied Products	31, 32	92,338.9	23,307.4	25.24%	2,757.6	696.0
Paving Material	26	80,869.1	4,324.9	5.35%	181.8	9.7
Plastic Products	25	31,614.4	7,842.9	24.81%	3,121.2	774.3
Rubber Products	25	31,614.4	7,842.9	24.81%	969.7	240.6
Leather Products	24	15,150.3	4,887.1	32.26%	727.3	234.6
Ceramic, Stone and Cray	34	32,507.3	13,513.7	41.57%	787.9	327.5
Iron and Steel Products	35	92,953.6	21,202.8	22.81%	1,575.8	359.4
Non-ferrous Metals and Products	36	13,883.8	2,172.4	15.65%	2,151.5	336.6
Fabricated Metal Products	37	33,379.9	12,374.1	37.07%	3,272.7	1,213.2
General Machinery	38, 39, 40	62,513.8	19,454.3	31.12%	6,393.9	1,989.8
Electric & Electronic Machinery & Equipment	41	53,875.1	16,812.0	31.21%	14,575.8	4,548.4
Transportation Machinery & Equipment	42, 43	60,896.4	23,031.4	37.82%	11,030.3	4,171.7
Precision Instruments	41	53,875.1	16,812.0	31.21%	5,000.0	1,560.3
Manufacturing Industry Total	--	--	--	--	59,030.3	18,207.4
Non-manufacturing Industry	50, 59	122,485.8	87,347.8	71.31%	14,242.4	10,156.6
Total	--	--	--	--	73,272.7	28,364.0

Date Source: * Input-Output Transactions Table 1983-84, Central Statistical Organization of India

** Study Team

(2) Estimation of Economic Costs

In this study, (a) Costs of land, (b) development costs of the IMT, (c) construction costs of the plants, and (d) management expenses of the IMT are considered as economic costs.

(a) Costs of Land

The planned site for the IMT is mostly used for agriculture with wheat as the main crop, and the economic price of the prospective IMT site can be estimated based on the agricultural production. The planned site for the IMT along Route 8 is, however, less likely to remain as for agricultural use for the next 10 years or more. Estimation of the economic price of land is hence based on the market price of land at Rs 2.5 million/acre (approx. US\$ 20.6/m²), assuming the prospective site is used for the IMT or for other plants. The costs of land for electricity transmission and drains are assumed as the same as in the financial analysis at 80% of the costs of the IMT site. The unit acquisition cost of land of Rs 250/m² (US\$ 8.25/m²) used in the financial analysis is based on book value of land and does to reflect the market price.

(b) Development Costs of the IMT

The amount used in the financial analysis is based on the market price under the assumed free competition, and the same is used for the economic evaluation. The investment costs for each year are as in Table 11.2.2.

(c) Construction Costs of Plants

The total construction costs are estimated at US\$ 695.0 million (Rs 21,060.61 million) by referring to information on past investments by Japanese firms in the ASEAN countries, China, Korea, India and other countries and from the field of industry and the unit site derived in Chapter 7 (Refer to Table 11.2.3). The investment costs for each year are based on similar assumptions to value-added.

(d) Management Costs of the IMT

The expense for management is assumed as 1% of IMT development costs. That during the development period is assumed proportional to the cumulative investment.

Table 11.2.2. Development Cost of the IMT

Year	(Unit: Rs Million)														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
Development of IMT															
Basic Infrastructure of IMT	0.0	560.2	933.7	373.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,867.4
Flyover	0.0	134.4	134.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	268.8
Promotion Center	0.0	0.0	224.2	224.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	448.4
Improvement of Outside Drain	0.0	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.3
Sub-total	0.0	694.6	1,292.3	612.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,598.9
Power Supply															
Gas Pipeline	0.0	0.0	269.9	180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	449.9
Power Plant	0.0	0.0	1,457.4	971.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2,429.0
Sub-station & Transmission Line	0.0	0.0	555.1	370.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	925.1
Rearrangement of Manesar SS	0.0	0.0	123.4	82.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	205.7
Sub-total	0.0	0.0	2,405.8	1,603.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4,009.7
Telecommunication															
Water Supply	0.0	0.0	132.5	88.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	220.9
Water Treatment Plant & Reservoir	0.0	0.0	44.4	133.2	266.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	444.0
Water Pipeline to IMT	0.0	0.0	14.9	44.6	89.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	148.6
Pumping Station	0.0	0.0	12.9	38.8	77.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	129.4
Sub-total	0.0	0.0	72.2	216.6	433.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	722.0
Sewage Treatment															
Waste Water Treatment Plant	0.0	0.0	29.9	89.7	179.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	298.9
Sludge Treatment Plant	0.0	0.0	23.7	71.1	142.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	236.9
Sub-total	0.0	0.0	53.6	160.7	321.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	535.8
Solid Waste Management															
Residential Facility	0.0	0.0	0.0	53.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.1
Town and Commercial Facility	0.0	0.0	0.0	712.9	712.9	1,425.8	1,425.8	0.0	712.9	712.9	712.9	712.9	0.0	0.0	7,129.2
Total Development Cost	0.0	694.6	3,956.4	3,447.6	2,094.8	2,053.0	1,425.8	541.6	1,254.5	712.9	950.7	950.7	237.8	0.0	18,082.7

Table 11.2.3 Projected Investments to the IMT

(Unit: US\$ Million)

	Umber of Unit	Plot Area(ha)	Investment Amount
Manufacturing Industry			
Food, beverage, tobacco & animal feed	5	17	34.0
Textile and apparel	5	11	11.5
Furniture and fixture	1	4	5.0
Pulp and paper	4	7	5.0
Publishing and printing	2	2	6.0
Chemicals and allied products	3	13	29.0
Paving material	1	2	8.0
Plastic products	4	15	30.0
Rubber products	3	5	12.0
Leather products	3	2	3.5
Ceramic, stone and cray	2	5	19.0
Iron and steel products	3	14	20.0
Non-ferrous metals and products	2	9	20.0
Fabricated metal products	5	15	35.0
General machinery	6	22	45.0
Electric and electronic machinery & equipment	8	34	103.0
Transportation machinery and equipment	2	30	50.0
Precision instruments	5	13	48.0
Manufacturing Industry Total	64	220	484.0
Non-manufacturing industry			
Warehouse	10	25	50.0
Petroleum products distribution center	2	10	100.0
Cleaning	2	2	10.0
Public market	20	4	30.0
Auto repair shops	4	4	6.0
Software park	10	2	15.0
Non-manufacturing industry total	48	47	211.0
Total	112	267	695.0

Data source: Study team

(3) Calculation of EIRR

The above mentioned economic benefits and costs are summarized in the comparison table, and the EIRR (economic internal rate of return) is computed (Refer to Table 11.2.4). The EIRR is 29.6% under the assumed conditions which shows this project is economically feasible.

Table 11.2.4 Economic Benefits and Costs

EIRR = 29.6%

Year	Economic Benefit	Economic Cost				Total	Balance
		Land	Development of IMT	Factory Construction	Administration of IMT		
0	0.0	3,837.5	0.0	0.0	0.0	3,837.5	-3,837.5
1	0.0	153.8	694.6	0.0	6.9	855.3	-855.3
2	0.0	0.0	3,956.4	0.0	46.5	4,003.0	-4,003.0
3	0.0	0.0	3,447.6	1,053.0	81.0	4,581.6	-4,581.6
4	0.0	0.0	2,094.8	2,106.1	101.9	4,302.7	-4,302.7
5	2,836.4	0.0	2,053.0	2,106.1	122.5	4,281.5	-1,445.1
6	5,672.8	0.0	1,425.8	2,106.1	136.7	3,668.6	2,004.2
7	8,509.2	0.0	541.6	2,106.1	142.1	2,789.8	5,719.4
8	11,345.6	0.0	1,254.5	2,106.1	154.7	3,515.3	7,830.3
9	14,182.0	0.0	712.9	2,106.1	161.8	2,980.8	11,201.2
10	17,018.4	0.0	950.7	2,106.1	171.3	3,228.1	13,790.3
11	19,854.8	0.0	950.7	2,106.1	180.8	3,237.6	16,617.2
12	22,691.2	0.0	0.0	2,106.1	180.8	2,286.9	20,404.3
13	25,527.6	0.0	0.0	1,053.0	180.8	1,233.9	24,293.8
14	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
15	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
16	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
17	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
18	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
19	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
20	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
21	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
22	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
23	28,364.0	0.0	0.0	0.0	180.8	180.8	28,183.2
Total	411,278.6	3,991.3	18,082.7	21,060.6	3,476.3	46,610.8	364,667.8

11.2.3 Other Economic Benefits

(1) Growth in Domestic Industries

The technology of India is capable of internal production of almost all industrial products, but the quality of most of the industrial products made in India is far from that of the imported products. The most effective method to support the growth of domestic industry in shorter time is to actively promote foreign investments and to obtain various technology and know-how of management of the foreign firms. Construction of the IMT will directly enforce this method. Improvement in technology is expected by continuous effort including collaborations with foreign firms to withstand increased competition in the field with other foreign firms. Furthermore, foreign investments in the IMT will either directly or indirectly influence the manufacturers of parts and semi-finished products, leading to growth in the related industry.

(2) Improved Trade Balance

The IMT is to promote investments from foreign firms intended to manufacture products for the domestic demand in India and will not directly contribute to earnings of foreign currency. However, if the quality of domestic products by stable production becomes competitive to that of imports, import substitution by products made in India will take place, and improved trade balance will be realized.

(3) Increased Employment Opportunities

From Chapter 7, 29,890 people will be hired full time. This constitutes 9% of the total plant operators (316,000) in the Haryana state and 1.26 times the same (22,847) in the Gurgaon area. Many of the IMT employees for plant operation will be skilled labor, and assuming the average monthly wage (including fringe benefits) of Rs 8,000, the overall annual payment of wage will be Rs 2,773.4 million. Many additional people will be hired for running the commercial and other facilities in the IMT. Creation of employment is also expected for the construction personnel during the site development of the IMT and construction of plants.

(4) Increased Income by Taxation

Foreign firms in the IMT serving the India market will contribute to increased national income by corporate taxes. Increased employment will increase income taxes from the employees. For the state, increases are expected in income by sales taxes and VAT.

(5) Effect on the Regional Economy

The land acquisition costs of Rs 1,631.8 million, development costs of Rs 18,082.7 million, and construction costs of plants at Rs 21,060.6 million making the total of Rs 40,775.1 million (approx. US\$ 1,345.58 million) will be invested in the IMT. This amount is of significant value (about 25% of GDP of Haryana in 1992/93) to the Haryana state.

(6) Effect on the Output

The industrial production in the IMT will expand (by induced production) the development of various fields. The currently projected level is with much uncertainty, but the industrial production will strongly contribute to the development of the regional economy and that of India. As a reference, the projected outputs are computed in Table 11.2.5 using coefficients of the inverse matrix.

Table 11.2.5 Projected Output from the Industrial Production

(Unit: Rs Million/year)

Industry	Industry Code	Final Demand **	Coefficient *	Gross Output
Food, Beverage, Tobacco & Animal Feed	13, 14, 15	2,212.1	2.183518	4,830.2
Textile and Apparel	16, 17, 18, 19	1,060.6	2.103942	2,231.5
Furniture and Fixture	21	545.5	1.753953	956.7
Pulp and Paper	22	1,757.6	2.423638	4,259.7
Publishing and Printing	23	909.1	2.197721	1,997.9
Chemicals and Allied Products	31, 32	2,757.6	2.265553	6,247.4
Paving Material	26	181.8	2.131680	387.6
Plastic Products	25	3,121.2	2.141015	6,682.6
Rubber Products	25	969.7	2.141015	2,076.1
Leather Products	24	727.3	2.199150	1,599.4
Ceramic, Stone and Cray	34	787.9	1.981394	1,561.1
Iron and Steel Products	35	1,575.8	2.537869	3,999.1
Non-ferrous Metals and Products	36	2,151.5	2.447816	5,266.5
Fabricated Metal Products	37	3,272.7	2.277472	7,453.5
General Machinery	38, 39, 40	6,393.9	2.417401	15,456.7
Electric & Electronic Machinery & Equipment	41	14,575.8	2.146237	31,283.0
Transportation Machinery & Equipment	42, 43	11,030.3	2.136413	23,565.3
Precision Instruments	41	5,000.0	2.146237	10,731.2
Non-manufacturing Industry	50, 59	14,242.4	1.648397	23,477.2
Total	--	73,272.7	--	154,062.7

Date Source: * Input-Output Transactions Table 1983-84

** Study Team

Chapter 12

Social Environment Assessment

Chapter 12 Social Environment Assessment

This Social Environment Assessment has been made in compliance with the instructions given in the Final Report of the Master Plan Study, to supplement or to up-date some part of the Master Plan Study that could not be completed at the time.

The components covered in this Study are : Land Acquisition, Water Rights, Employment Related Problems, Commuting, Slums and Environmental Protection.

12.1 Land Acquisition

The Land Acquisition Act, 1894, stipulates that the land required for public purposes can only be acquired by either the central or state governments. Because of the nature of this project, the land will be acquired by Haryana State Government.

Accordingly, the focus of this Social Environmental Study has concentrated on the providing for a basis for the smooth transfer of the required land.

In the acquisition of land, it is recommended to first grasp the present conditions of the following matters: the names of landholders; situation of land holding; the actual situation of land utilization; agricultural production; farm management systems; those farmers who, besides the landowners, depend on the land for their livelihood in the proposed site.

This Study, in light of the conditions of the proposed site, has focused on the studies of the general procedures of the land acquisition and farming systems that are being practiced in the Gurgaon District. This information could be the baseline data for discussion of assessing fair amounts of the necessary expenses for land acquisition.

12.1.1 The Present Situation of Land Acquisition

It is understood by all people concerned that a peaceful and amicable acquisition of the land is a prerequisite for the initiation of project implementation.

As reported in the Final Report of the Master Plan Study, the number of landowners within the proposed site considered is approximately 100 persons, most of whom are land farmers. These lands were preferentially given to, following the land reform that was established after becoming independent, those who had been cultivating more than 10 years. According to the policy of "land for tillers", the number of the so called "landlords" has greatly reduced.

As for the present state of land acquisition, the State government has issued the second notification on November 15, 1994 and the land acquisition is expected to be completed by May 1995.

Further more the Haryana State Government expressed their intention to complete the land acquisition within a short period by the application of the so called "Emergency Land Acquisition".

At the time of the second field study, the notification for major parts of the required land had been already given.

12.1.2 Land Acquisition by "Urgency"

A part of Section 17 of the Land Acquisition Act states;

"In cases urgency, whenever the [appropriate Government] so directs, the Collector, though no such award has been made, may, on the expiration of fifteen days from the publication of the notice mentioned in Section 9, sub-section (1), [take possession of any land needed for public purpose.] Such land shall thereupon vest absolutely in the [Government], free from all encumbrances."

Section 17 of the Act further stipulates that;

"[(3-A) Before taking possession of any land under sub-section (1) or sub-section (2), the Collector shall, without prejudice to the provisions of sub-section (3),

(a) tender payment of eighty per cent of the compensation for such land as estimated by him to the persons interested entitled thereto, and

(b) pay it to them, unless prevented by some one of more of the contingencies mentioned in Section 31, ..."

Further, the Act stipulates that the compensation for land acquisition for public purposes is exclusively made by monetary means. A "land for land" policy that is widely recognized in the world these days is not a legal obligation by Indian law.

Nevertheless, the Governments of India and Haryana State have expressed, in acquiring the land, their intentions to render their best assistance to the farmers concerned by assessing land prices to suit the present prices, offering the land to replace for the farmers who desire so, financial assistance for those who wish to shift their occupation to independent businesses, or to provide vocational training for those who want to get jobs in advancing factories.

12.1.3 Land Acquisition Procedures

The above-mentioned Land Acquisition Act is basically common to the entire of India, but amendments for each section are established by many states.

As already explained, the land acquisition for public purposes is enforced according to the Land Acquisition Act, 1894, by the central or state government. The person who actually exercises this power is a state government official called the "Collector." The actual acquisition is done according to the following procedures.

(1) Preliminary Notification

The first step of land acquisition for public purposes is to make a "Preliminary Notification" to the public in accordance with Section 4, through an official gazette and two different

newspapers, stating the fact that the Government requires the land.

The notification will be placed in the India Official Gazette and two kinds of newspapers. one will be placed in an English daily paper and the other in a daily paper that is written in the language used in the target region. Furthermore, for the people who do not read these papers, the Collector in charge will go around the target villages by announcing the above with beatings of drums to call people's attention. The Collector also announces the people involved to report to his office.

After this preliminary notification, the government officials are allowed to survey the localities or to draw borders around the land.

- (a) After the above notification, Section 5-A states that any person involved may "...[within thirty days from the date of the publication of the notification], object to the acquisition of the land or of any land in the locality ..."

The Collector will make a survey against such an objection and submit the case along with his report and recommendation to the appropriate Government office. Then, the Government makes a decision.

"The decision of the [appropriate Government] on the objections shall be final."

- (b) If the Government accepts the objection, the land will be released.

(2) Declaration of Land Required

Section 6 of the Act stipulates, "If the [appropriate Government], regardless of the fact that an objection is submitted, decided that any particular land is needed for a public purpose, or for a Company, a declaration shall be made to that effect," " ... and after making such Declaration, the [appropriate Government] may acquire the land ..."

This Declaration shall be placed, as in the case of the Preliminary Notification, in the Official Gazette, two kinds of daily newspapers - one in English and the other in the language used in the region. This declaration shall be the final decision, and after such announcement the land will be acquired by the Government.

(3) Request for Compensation

After the announced Declaration, following Section 9, the Collector shall notify the persons involved, the exact description of the land to be acquired, and that the land shall be acquired by the Government. He also notifies each person interested to report to the Collector's office at the time and the date appointed by him.

On the other hand, the persons interested may request the amount of compensation giving clear basis for calculation, including permanent structures on the ground such as standing trees, buildings, and tube wells, within twenty-one days in writing with a signature.

Receiving the above request, the Collector shall perform a detailed survey, and comes up with the amount of compensation based on the market value of the land at the time of the Preliminary Notification. However, in reality the actual amounts of compensation shall be considerably higher than that of the market value because some thirty per cent, a "compulsory acquisition charge", shall be added to the original amount of compensation. Or in case the compensation was not paid prior to the land acquisition, an additional interest of nine per cent shall be paid for the first year, and after that, fifteen per cent shall be added. Thus, the total amount of compensation will be fifty to sixty per cent higher than the market value of the land.

(4) Payment of Compensation

Upon the decision on the amount of compensation, the Collector shall notify the persons interested or their agents that the amount has been decided and these the persons or their agents report to the Collector's office at the time and on the date appointed. If the persons interested agree to the amount, the compensation will be paid immediately on the spot in the form of a check.

(a) Those who do not consent to the amount of compensation, may object in accordance with Section 18, within six weeks.

(b) Then, the cases will be forwarded to a district court. (The Collector's office states that in the past about 80 ~ 90 % of the persons interested objected to the amount of compensation and cases were forwarded to a district court.)

(c) The court will decide the amount of compensation based on the market value. However, the amount should not be lower than the amount given by the Collector.

(5) And, if the amount of compensation given by the court is higher than that was compensated to the persons interested (claimants) by the Collector, then, those who have already received the compensation are entitled to claim for the difference.

(6) If the persons interested object to the decision made by the district court, they are able to take the case to a high court. If they still do not agree to the decision by the high court, the cases can go as far as the supreme court. However, the chances of the cases reaching the supreme court is only about 1%.

These are the general procedures taken by the Collector.

In general, a public hearing prior to the start of a project is practiced in India. If it is decided that the government requires the target land by all means, the owners simply must transfer the land to the government. The landowners are allowed only to object to the amount of compensation. Moreover, according to the Land Acquisition Act, the matter to be considered in determining the amount of compensation are only the land and permanent structures such as buildings, tube wells, standing trees and standing crops on the land. Also only the landowners are eligible for compensation. That is, the compensations for other rights and the required expenses such as - tenancy rights, mental sufferings, expenses required for physical transfer, etc., are not included. Neither do they offer the land for replacement. Again, the tenants and farm laborer who depend on the land for livelihood are not eligible for compensation.

12.1.4 Land Utilization

A major part of the proposed site is agricultural land, except for a resort hotel, power station and a communal crematory, which are located in the site. To explain the land utilization of the site, the results of the study on the farming systems that are practiced in the Gurgaon District are described below.

(1) Agricultural Land

(a) Actual Situation of Farmers in the Neighborhood

An average farm family in the Gurgaon District consists of 6 to 7 members. Only approximately 30% of farmers exclusively live on agriculture. The other 70% of families have other means of income along with agriculture. Also, about 30% of farmers have some degree of education, and more than 70% of farm families have only approximately 2 Ha. of farm-land.

Further, 10 to 15% of farm families are considered tenants, and many others are farm labourers. In general, those tenants do not have a legal contract for tenancy but simply borrow the land with verbal promises each year. Farm labour also is hired only when necessary. Those labourers also generally do not have formal contracts with the landowners.

(b) Farming Systems

Farm families are generally supported by three components of income sources; crop production and sales, livestock holding, and incomes from piecework.

(i) Agricultural crops

Farming in Gurgaon District is generally rain-fed. Irrigated farm-land in the District is only 19%. The soil in the area is mostly sandy-loam which is suitable for agriculture. The Gurgaon Canal that is running through the District to provide irrigation water does not reach the site area. Accordingly, many farmers in the site area are using wells that they dug within their farm-land.

Major crops planted in the area are wheat, bajra, rice, gram, jowar, barley, and mustard. About 60 to 70% of wheat and bajra are domestically consumed, but rice, gram, jowar and barley are generally marketed. Mustard is the most important cash crop and produced only for marketing. Table 12.1 shows the Crop Production of the District.

The comparison with average yields for Haryana state (1991~1992) show that productivity in the District is about the same. The yields are considerably high in jowar and low with wheat.

Table 12.1.1 : Crop Production

Type of Crops	Total Planting Area (ha)	Average yield (Kg per Ha.)	Domestic Consumption	Sales Price (Rs. per Kg)
Wheat	102,000	2,850 (3,597)	60%	3.50
Bajra	48,000	660 (563)	70%	2.60*
Rice	4,000	2,732 (2,831)	20%	3.10
Gram	7,000	525 (659)	20%	6.40
Jowar	14,000	425 (286)	10%	4.00
Barley	5,000	2,200 (2,074)	10%	2.75
Mustard	63,000	1,200 (1,004)	0%	8.10

Remarks: * Minimum support price

() Between the parentheses show Haryana averages

Sources: Agricultural Office, Gurgaon District, Statistical Abstract of Haryana, 1992-93

Rice, bajra, jowar are the crops for the rainy season - Kharif season, and will be cultivated and sown around June and July. They are harvested in October. Wheat, barley, gram and mustard are for the dry season - Rabi season. They are planted in September to October, and harvested in March to April. Farmers in this area also produce vegetables, and practice horticulture during the dry season.

Since the production of mustard requires less input and sells at a good price, mustard is the farmers' preferred crop.

For example, one average family working on farmland of 2 Ha, may produce 1 Ha. of wheat, and 1 Ha. of mustard during the dry season, from September to April; and 1 ~ 2 Ha. of Jowar or Bajra during the rainy season.

Table 12.1.2 : Production Cycle

Crops	Wheat	Bajra	Rice	Jowar	Barley	Mustard
January	-				-	-
February	-				-	-
March	-				-	Harvest
April	Harvest				Harvest	
May						
June			Nursery			
July		Plow/sow-	Trans-Plant	Sow-		
August		-	-	-		
September		Harvest	-	-		Plant
October	Plow	Harvest	Harvest	Harvest	Sow	Plant
November	Sow				-	-
December	-				-	-

Remark: - indicate the production periods of each crop.

Source: Agricultural Office, Gurgaon District

(ii) Farm expenses

Approximately Rs. 5,000 are considered to be required to produce 1 Ha. of crops. Generally each farm family cultivates 2 Ha. of land, and produce different crops during two different seasons.

For example, the expenses required to produce 1 Ha. of wheat are as follows.

. Seeds and saplings (100 kg/ha. require)	Rs. 600
. Fertilizers (Urea-2 bags, Phosphate-1 bag)	Rs. 1,600
. Tools/equipment and their maintenance	Rs. 300
. Hired labourers (2-3 persons for 10 days/ for one cycle. Rs. 50/day/persons)	Rs. 1,000
. Other miscellaneous expenses/contingency	Rs. <u>1,500</u>
	Rs. 5,000

From the above calculation, it can be said that the expenses that are required for the production of 2 Ha., which is an average landholding of the farmers in this area, will be roughly Rs. 10,000 ~ Rs. 15,000.

Farmers generally do not have enough income or savings to cover such expenses, but loans are easily available from coops at 9%/year interest. They can repay either in cash or in crops.

In between these farm activities, farmers seek various piecework to earn extra incomes -farm labour on other farmers' land, day-labour at construction sites, or petty-trades.

(iii) Marketing

India has a policy to support farmers through "minimum support prices". These "minimum support prices" are announced each year for 30 major agricultural crops about a half year prior to the planting, so that farmers can know the minimum sales prices of those crops, and can plan the selection of crops beforehand. When farmers want to sell those crops, whether the Government need them or not, they must purchase them at the announced prices. The Government of Haryana generally pays for each crop Rs. 2 or 3 more than that of the central government.

Every 2 to 3 villages have a cooperative that is organized by the government, and most farmers belong to one of the coops in the area. The sales of crops to the government is done through those coops.

Also, farmers are able to sell their crops directly at one of the grain markets with a permission from the government, and by paying 1% commission from their profit. They can sell the crops to local wholesalers.

(iv) Livestock holding

As milk drinking is very common in India, even the poorest of farmers own 1 or 2 cows or water buffaloes. They are for domestic use or for extra income by selling the milk.

Since many farmers are Hindu, beef cattle are not generally raised. For the reason that water-buffaloes can be used for farm labour, the number of buffaloes is much greater than the number of cows.

Animals other than cows and water-buffaloes are rarely seen. One reason for this seems to be a caste based tradition that milk-producing animals can be raised by any caste but other animals such as pigs and chickens, are kept only by a certain caste.

Animals are fed around their house or often taken to the common land of each village. The rights to the common land are equally given to all villagers as long as the farmers belong to the village.

Livestock holding for farmers is quite an important part of their farming system, for they are insurance in case of crop failures or in need of extra money due to sickness of family members, child birth or school fees.

(2) Crematory

The sub-station and crematory which are located within the proposed site are to be moved to other places.

The crematory is situated along a farm road leading from the National Highway No. 8 westwards, and is used by the surrounding 6 villages. It cannot be left in the site. It is expected the crematory will be relocated somewhere else sooner or later for it is completely an open type. It is located at an immediate area of the National Highway and because the crematory is a sacred place, it is strongly recommended that the Haryana State Government bear full responsibility of relocating the crematory to an appropriate place so that it will not hamper the implementation of the project.

12.2 Water Rights

The Master Plan Final Report mentions the study on the Manesar Drain as one of the F/S check points.

12.2.1 Water Utilization

The Manesar Drain was, basically constructed to protect the area from floods from heavy rains, and was not meant to be used for irrigation. Accordingly, water rights for the drain use do not exist. Nevertheless, some farmers may sometimes use it for irrigation water.

As already explained, the farming in the site area is basically rain-fed. However, many farmers have tube-wells within their farm land for dry-season crops. Those wells are sometimes used for drinking water as well. Because of this situation, farmers freely digging wells in their farm-land, the falling of the water level and salination of water are increasingly becoming problematic.

To date, no government laws or regulations to control the digging of wells have been established. Thus, it is likely the above situation will rapidly deteriorate. The government, however, well recognize the problems. Although laws and regulation to control the digging of wells do not exist, the Haryana government prohibits furnishing loans for digging wells on certain land. Farm lands are classified into three categories by the government as follows, and loans for land falling on black and gray are not provided.

Black - Water level is very low

Gray - Water level is becoming low

White - No problems

12.2.2 Gurgaon Canal (Irrigation Water)

(1) Water for agriculture

Irrigation water is provided to major areas of the Gurgaon District by the Gurgaon Canal. This Canal takes water from Okhla Head Works of Yamuna River, and becomes Agra Canal. After about 6 kilometers from the intake point, the canal is divided into several branches. One of these branches is the Gurgaon Canal. The Gurgaon Canal extends to an area of 45,200 Ha. (113,000

acres), but it does not reach the southern most part of the district where the proposed site is located.

(2) Water rights of Gurgaon Canal

Gurgaon Canal is operated and managed by the government Irrigation Office. Branch offices of the Irrigation Office are established at every 2 - 3 villages. Canal Patwari and Irrigation booking clerks make surveys on all details of irrigation matters and carefully record them. They often visit the villages under their command and confirm the details of land holding, planting areas of crops, the kinds of crops planted, and the situation of tenancy, etc.

Because the distribution of water to their farm lands depend upon these records, the accuracy of the records is of vital importance to the farmers. When farmers have complaints or are dissatisfied with the water distribution, they can take the matter to the Irrigation Office.

Irrigation water is distributed to the lands (not farmers) whereonly 30 major craps are planted. The amount of water, the hours to be distributed will be determined based on the record and the schedule for when the water will be distributed will be prepared. All farmers can freely select their crops, and all the farmers who planted the mentioned 30 major crops have, regardless of their land ownership, equal rights to the water.

The farmers who receive the distribution of water pay a small fee for the operation and management to the Irrigation Office.

Even if the farmers who own their land within the proposed site, sell their land and purchase new land elsewhere in the Gurgaon District where Gurgaon Canal operates, they do not face the problems of water rights. No particular qualifications other than the planting of the specific crops mentioned above, are required to obtain water rights. They can easily acquire the rights equal to all other farmers.

12.3 Employment Related Problems

There are too points concerning the employment situation to be discussed. One is labor force and the other is labor conditions.

12.3.1 Labour Force

The information on "economically active population" and their "unemployment rates" around the proposed site could not be obtained at the time of F/S. However, the site is located only approximately 40 kilometers from the capital city, Delhi, and considering the population of India and Delhi, and their education level, it is unlikely to face difficulty in finding an appropriate labour force, consisting of highly qualified engineers/technicians to unskilled day-labourers.

If any, the problems will be how to transport them or how to provide them shelter but no shortage of securing labour force.

(1) "Employment Exchange"

Most cities in India have a government operated "Employment Exchange". Those who have some degree of education, skills and specialty, and who seek job opportunity generally register with the Exchange providing their curriculum vitae. The companies looking for workers also find the workers through an Exchange.

(2) Unskilled labourers

In many cases, unskilled day labourers are collected through a man called a "Contractor". Because no permission or licenses from the government are required to become a "Contractor", they can be found in any town or city, and they quite readily offer necessary labourers.

Moreover, because of the central government plan of "Regional Plan 2001", and the Haryana state government policy to collect industries to the southern part of the state, a tremendous scale of development projects are undergoing in the neighborhood of the site, and construction of factories and housing is flourishing. Further, as the district is adjoining the state of Rajasthan where the land becomes almost barren during the dry seasons, many farmers flow out to the Gurgaon District in search of jobs. For these reasons, it may be quite easy to secure an unskilled labour force in the site area.

(3) Semi-skilled labour

Many cities of India are also provided with "Industrial Training Institute - ITI", where technical skills for the youth with a certain degree of education can be acquired. (refer to the Chapter 3 for detail). However, a large number of trainees cannot be accepted at a time due to the limited size of the institute. Also, because the ITIs are vocational institutes only semi-skilled technicians can be trained.

The statistics of Haryana state shows that only 512 women have been training at the Women's Department of the Training Institute in Gurgaon District during the 8 years between 1986 and 1993. This comes to an average of 64 persons per year.

Table 12.3.1 : Number of Girl Students on Rolls in ITI Gurgaon

1966~ 1967	1970~ 1971	1975~ 1976	1980~ 1981	1985~ 1986	1990~ 1991	1991~ 1992	1992~ 1993
62	45	63	58	76	72	72	64

Source: Statistical Abstract of Haryana, 1992 ~ 93

(4) Apprenticeship

The country also has a system of "Apprenticeship" to train inexperienced youth from high schools, vocational schools and colleges/universities. With this system, schools send their students to enterprises to receive "on the job training".

This scheme gives enterprises the chance to have ample opportunities of carefully observing the capability, attitude, willingness and compatibility etc. These are important criteria for selecting employees, and the future candidates, to help enable them to secure qualified human resources.

(5) Japan-India joint venture enterprises

An extremely successful Japan-India joint venture company runs an automobile factory within the neighborhood of the proposed site. To be employed by this factory is a target of envy of the people in the area. The person in charge of the administration of this enterprise states that the company never has any problem in finding a labour force, from highly qualified technicians to unskilled labourers as applications are constantly being sent to the company from all over the country.

At present, the securing of highly qualified human resources is possible because of a high competition among applicants. Positions are available to only one in every 10 to 30 applicants to enterprises with good reputations.

However, due to the rapid industrialization of the Gurgaon District, and because of the quick increase in the number of newly constructed factories, it is anticipated in the near future that the securing of a qualified work force will gradually become difficult.

12.3.2 Labour Conditions

(1) Strikes

Many Unions exist in India, some are by industry and some are by occupation, and strikes are almost endemic in the entire country. There is a tendency of workers to strike whenever they are dissatisfied with something. This is influenced by, it is said, the non-violence principle of Gandhi.

However, strikes are rare in the factories that are operating in the neighborhood of the proposed site. The successful factory that was mentioned in the previous section, has no experience of strike. This indicates that if the welfare of the workers is well considered and the management staff appropriately run the company, then strikes could be avoided.

(2) Labour conditions

Factories that are related to the HSIDC in the Gurgaon District, normally provide medical insurance/expenses and a part or full expense for transportation. Large enterprises often provide housing for management. Most companies partially share lunch expenses and provide very cheap lunches.

A bonus minimum of 8% of the salary, generally 15 to 20%, is paid once a year. There is neither unemployment insurance, nor retirement pay.

Further, the Labor Law stipulates that the minimum daily wages for all workers, regardless of the type of work, whether they are factory workers or agricultural labourers, should be paid at least 42 rupees per day throughout the country. However, workers in the Haryana State where average incomes are higher than of the national average, are generally paid about 60 rupees per day.

Table 12.3.2 : Wages actually paid to agricultural labourers and skilled workers

	Cultivation	Sowing	Weeding	Harvest	Cotton Picking	Other Works	Black-smith	Carpenter
Gurgaon	60.00	39.58	40.00	45.00	-	53.33	88.75	100.00
Others	41.20	41.25	41.25	41.36	40.00	41.25	92.50	92.50

(3) Labour laws and regulations

Labour laws are well established, but as to how well these regulations and laws are enforced has not been studied. It is considered that they are commonly practiced and the rights of workers are protected. Some of the labour regulations are listed below.

The "ESI-Employees' State Insurance Act, 1948", medical scheme for employees; "The Workmen's Compensation Act, 1923" to secure employees' financial state; "Equal Remuneration Act, 1976", to reduce the inequality between men and women; "The Labour Laws Act, 1988"; "Minimum Wages Act, 1947"; and "The Industrial Disputes Act, 1947".

(4) Religion and caste system

The conflicts, discrimination or harassment's among and between people over religion or castes are widely reported in the mass-media and therefore feared by many are not happening, at least among joint-venture companies.

The above condition may have been created by the change in people's opinions and attitudes due to the proximity of the area to the national capital where changes are radical and rapid. Moreover, the determination of the employer to clearly announce at the time of employment their policy of equal treatment to all staff, seems to help avoid the conflicts of this nature.

However, the caste system still persists in some rural areas and there are villages where the selection of occupation is affected by tradition.

12.4 Commuting

In relation to the labor force, commuting may be a problem. India has a long history of railroad transportation but all other available means of commuting have to depend on bus transportation, or very seldom on trucks.

12.4.1 Haryana Roadways

The major public transportation available within Haryana state are buses. Until 3 years ago, the public bus services had been monopolized by the Haryana Roadways, financed 100% by the state government.

The transportation network of the Gurgaon District is under the control of Gurgaon Haryana Roadways Depot situated in the city of Gurgaon. This depot runs 231 large buses (52 passengers), and operates their own repair shop. Their bus service schedule is attached on the next page.

(1) Bus service

The Roadways' daily bus service starts from 4:30 a.m. every morning from Gurgaon Depot. They provide a total of 52 round bus trips.

Fourteen buses are traveling to or via Delhi each day through 6 different routes. The buses going toward Delhi all travel on the National Highway No. 8 as far as the entrance of Delhi, and from there the routes are separated to major points of the city. Some buses travel further to other important points of villages or towns. The traveling time between Gurgaon and Delhi is about 1 hour to 1.5 hours.

There are 18 buses with 9 different routes traveling to or via the village of Manesar where the proposed site is located. Although the frequency of the service is quite limited, there are also buses traveling through the surrounding 7 villages.

In the case that a large number of workers are employed from Delhi or Gurgaon city for the industries operating in the site, the above bus services can not provide sufficient service to transport the workers. But, the Director of the Haryana Roadways Depot stated that if the necessity arose, and if they think it's profitable, they are willing to increase their bus services.

(2) Other means of transportation

As explained, the major means of transportation is normally by bus. However, about 3 years ago, the state monopoly of bus services had been criticized, and as a result the state government has started to gradually open the business to the private sector.

Presently two types of public transportation systems by the private sector provide services. One is a group of the unemployed youth who formed associates under the direction of the government, and obtained a permission to operate bus services for only designated routes. The other one is simply illegally operating through individuals or groups without permission.

Both groups are using either micro-buses or trucks at much lower rates than the government bus charges shown below.

Government bus fares:

Gurgaon ~ Delhi	8 Rupees
Gurgaon ~ Manesar	4 Rupees

Because of the lower fares, many people use the micro-buses and trucks for commuting. Their safety, however, may be questionable.

(3) Bus services by own companies

Other than the above, many companies and factories operate their own transportation to carry their employees. Furthermore there are cases that the Haryana Roadways is providing special buses for transporting commuters to and from the factories to certain points.

Table 12.4.1 : Bus Routes and Schedule by Haryana Roadways Depot

Destinations · Via	From Gurgaon	Return
1. Gurgaon - Delhi - Pushher	11:00 a.m.	7:45 a.m.
2. Gurgaon - Delhi - Jaipur	6:45 a.m. 7:45 a.m. 7:51 a.m.	12:10 15:00 15:20
3. Gurgaon - Delhi - Sahpur	8:00 a.m.	12:30
4. Gurgaon - Delhi - Narnoul - Singhana - Khetri	7:30 a.m. 9:00 a.m. 9:30 a.m. 13:45 15:30 16:20	4:30 a.m. 5:00 a.m. 7:10 a.m. 12:20 12:20 13:00
5. Gurgaon - Delhi - Mohandugarh	10:10 a.m. 16:30	6:30 a.m. 14:00
6. Gurgaon - Kotkashim via Rewari	16:30	7:00 a.m.
7. Gurgaon - Kotputly via Dhaseehera	9:00 a.m. 9:30 a.m.	12:30 13:00
8. Gurgaon - Rewari via Manesar	8:20 a.m. 9:30 a.m. 10:00 a.m. 10:30 a.m. 11:30 a.m. 11:50 a.m. 12:00 12:25 13:00 14:25 17:20	6:45 a.m. 10:00 a.m. 11:30 a.m. 12:00 12:30 13:15 13:50 14:00 14:25 15:00 16:20
9. Gurgaon - Jarthal via Rewari	18:30	6:30 a.m.
10. Gurgaon - Babel vial Rewari	17:20	7:00 a.m.

Destinations - Via	From Gurgaon	Return
11. Gurgaon - Sulbha via Rewari	19:30	6:30 a.m.
12. Gurgon - Nandrapur Bas via Manesar	18:30	7:00 a.m.
13. Gurgaon - Joragi via Bilashpur	18:30	6:30 a.m.
14. Gurgaon - Malahera via Rewari	18:10	6:30 a.m.
15. Gurgaon - Nerhera via Bilashpur	16:50	6:30 a.m.
16. Gurgaon - Kesan via Manesar	6:40 a.m. 8:30 a.m. 10:30 a.m. 12:30 15:30	7:40 a.m. 9:30 a.m. 11:30 a.m. 13:30 16:30
17. Gurgaon - Borakalan via Manesar	14:10 18:30	6:30 a.m. 16:00
18. Gurgaon - Ghosgarh via Manesar	8:20 a.m. 17:20	6:40 a.m. 9:30 a.m.
19. Gurgaon - Tatarpur via Manesar	11:00 a.m. 18:30	6:30 a.m. 12:30
20. Gurgaon - Rathiwas via Manesar	8:20 a.m. 19:20	7:00 a.m. 10:00 a.m.
21. Gurgaon - Sidhrawli via Manesar	18:30	6:30 a.m.
22. Gurgaon - Delhi - Udaipur	19:30	6:00 a.m.
23. Gurgaon - Dhaseehera via Manesar	10:15 a.m. 11:30 a.m. 15:30	11:15 a.m. 12:30 16:30

Source: Haryana Roadways Gurgaon Depot

12.5 Slums

There is concern on the formation of a low-income residence around the site during and after the construction of the IMT.

The Ministry of Industry and the Haryana State Government fully recognize the necessity of taking a precaution against the appearance of such slums. They said for example, they would establish a regulation to prohibit the construction of buildings along both sides of the highway and roads. However, it may be difficult to prevent the appearance of slums only by the establishment of rules and control for roads. Other fundamental policies, other than a regulations may be required.

The IMT, either the implementing body or Haryana State, will prevent the emergence of slums by offering low-cost housing for families and singles of small-income groups, canteens of some kinds and open markets of a certain standard.

12.6 Environmental Protection

There are two areas that require special environmental considerations around the proposed site. One is Aravalli Natural Preservation and the other is Sultanpur Bird Sanctuary.

12.6.1 Aravalli Range (Natural Preservation)

Aravalli Range is one of the very few important natural preservations within the national capital region, and the importance of the preservation of this range is emphasized in the "Regional Plan 2001". Unfortunately, a considerable degree of environmental degradation of the range is already in progress. However, a detailed study of the range has not been done yet.

Because the area is designated as a natural preservation, the Ministry of Environment and Forests in India prohibits various activities - industrial activities, mining operations, timber harvests, construction of residential housing or other social infrastructure, and electrification within the area of the Aravalli Range without a prior permission. Nevertheless, it is not clear about the activities around the Preservation.

The IMT project plans to take various types of countermeasures to control industrial pollution as well as plans to pay particular attention to protect the natural environment surrounding the site. It is necessary however to know first the actual conditions of the area in order to take appropriate precautions. Only based on the results of the study, realistic and specific measures can be taken.

12.6.2 Sultanpur Bird Sanctuary

This Sanctuary is located at about 47 kilometers southwest of Delhi, and about 17 kilometers from Gurgaon city, at 28°28'N.L., 76°53'E, and under the control of the Department of Wild Life Preservation, Haryana. The Sanctuary has within its site a small rest house, a bird museum and a lake which is filled with water during the rainy season and becomes a small pond during the dry season. The site was designated as a national park by Haryana State in 1991.

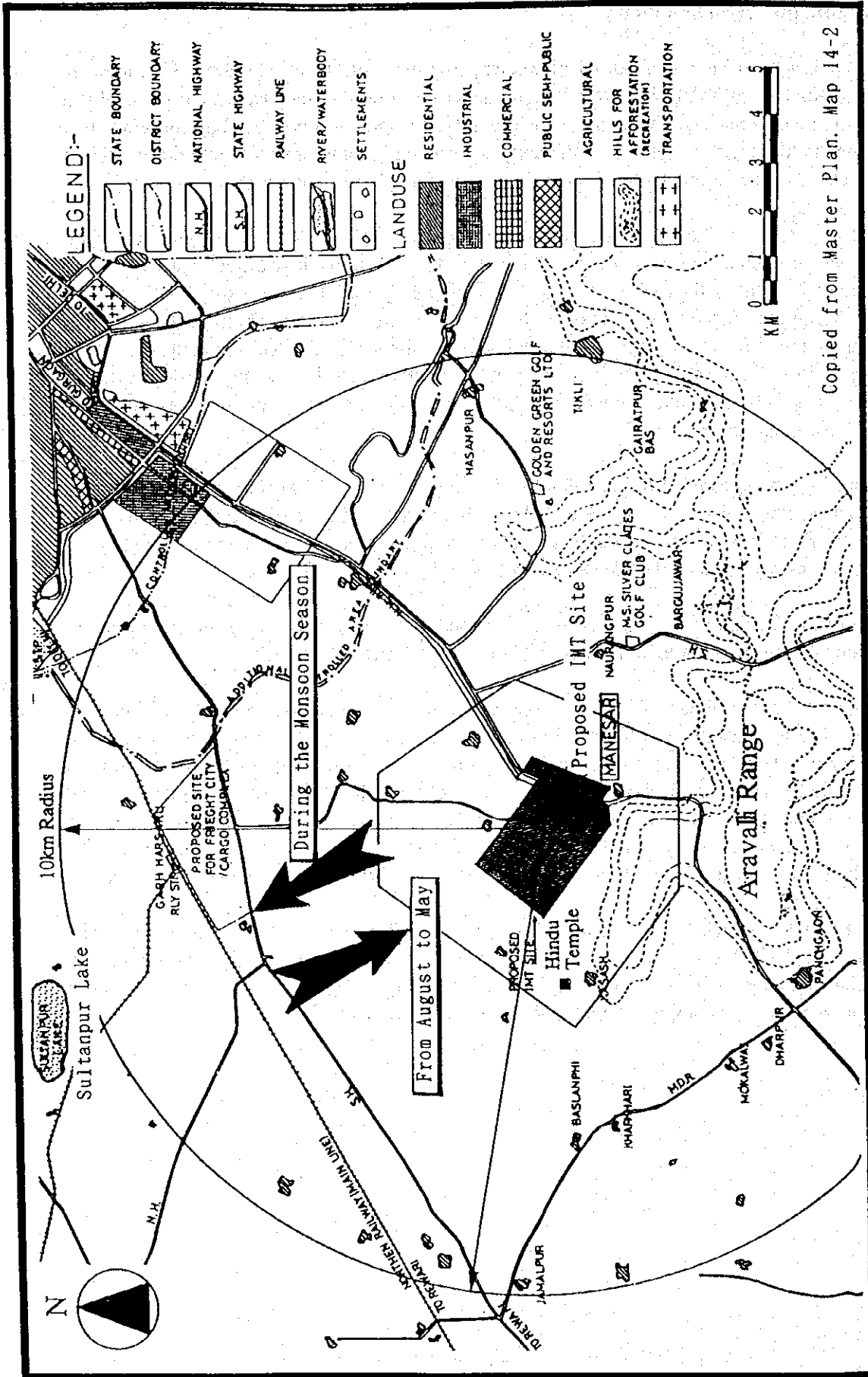
After the designation, the vegetation of the site rapidly improved for tree planting and cattle grazing was prohibited. Various crustacean fishes and insects in the lake attract waterfowls. The studies done in 1969 by the members of the International Union for Conservation of Nature, and in 1985, some 250 different species of birds were recorded. Of which, about 150 are resident birds, and another 90 are migratory bird species from Siberia, Europe and Afghanistan or local migratory birds. Some of the grebes, pelicans, cormorants, storks and herons arrive to the Sanctuary in search of feeding grounds during the winter time, but only few species can be seen during the summer season.

The Final Report states the Environmental Guideline for Siting of Industry prepared by MEF, instructs that industrial sites be separated at least 25 kilometers from ecologically sensitive areas such as this Sanctuary. As the proposed site is located at a closer distance than instructed by the Ministry, necessary measures to prevent environmental pollution will be taken.

The Wild Life Warden of Gurgaon District expressed his view as follows for the possibility of environmental impact to the Bird Sanctuary by the development of the IMT.

"I believe that the impact of the industrialization of Gurgaon District and IMT will be very little. The reasons are as follows. First, the winds around this area blow most of the year, from August or September to the next May, from the direction of the Bird Sanctuary toward IMT, that is from northwest to the southeast. Only during the Monsoon season, June and July, winds blow from the southeast to the northwestward. Even if the air from the southeast is polluted, the winds during the Monsoon season are extremely humid, and the pollutants will be absorbed by the moisture. Therefore, there will not be much problem.

Further, the policy of the Industrialization of the Gurgaon District and the IMT is not to invite those industries which cause pollution, in addition, even if the industries which cause pollution were joined, so far as they observe industrial pollution control regulations, and establish sufficient green belts, the impact of industries should be minimal."



Copied from Master Plan. Map 14-2

Fig 12.6.1 : Change in Wind Direction by Season

12.6.3 Environmental Impact Assessment

An Environmental Impact Assessment (EIA) following manuals or guidelines prepared either by the Indian Government or JICA has not been done to this date for this project.

The Environment (Protection) Act of India stipulates as follows.

(1) The Environment (Protection) Act, 1986

In 1986 May, Government established environment protection laws. The act was intended to concentrate the authority to the Central Government, that is, to the Ministry of Environment and Forests, and to integrate the laws that has been under separate jurisdictions between the state and the federal levels.

Article 3 and Clause 1 of Article 3 of the Act clearly explains the power of the Central Government over the state power, "**3. Power of Central Government to take measures to protect and improve environment.**-(1) Subject to the provisions of This Act, the Central Government shall have the power to take all such measures as it deems necessary or expedient for the purpose of the protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution."

It further stipulates 12 measures such as the following:

"(i) co-ordination of actions by the State Governments, officers and other authorities -- ...

(ii) planning and execution of a nation-wide programme for the prevention control and abatement of environmental pollution;

(iii) laying down standards for the quality of environment in its various aspects;" etc.

Moreover, Article 5 stipulates "**5. Power to give directions.** - Notwithstanding anything contained in any other law but subject to the provisions of this Act, the Central Government may, in the exercise of its powers and performance of its functions under this Act, issue directions in writing to any person, officer or any authority and such person, office or authority shall be bound to comply with such directions."

(2) Environmental Impact Assessment (EIA)

An Environmental Impact Assessment of India is carried out based on the Clauses 1 and 2 of Article 3 of the fore-mentioned Environment (Protection) Act and (a), Clause 3, Article 5 of The Environment (Protection) Rules of 1986.

The projects subject to the EIA are listed in the Annex-VIII, of the Report of the Master Plan Study. Projects are first divided into three categories - hydroelectric power and irrigation; thermal power; industrial development projects and mining. Later communication projects and new towns, etc., have been added. An EIA is required for those projects that fall under one of the above categories, and also for ones coming under one of the following:

- “ projects that require the clearance by the Public Investment Board
- projects that require international investment
- projects involving state governments or administrative ministries
- projects in sensitive areas”

In light of the above chapters and clauses, EIA falls under the authority of the Central Government of India. Similarly, the IMT project falls under the category of "industrial development project" and clauses 2, 3, 4 of the above, "requiring an Environment Impact Assessment". These clauses however do not clearly specify as to what stage the assessment should be carried out.

The documents submitted by the project component to the Ministry of Environment and Forests will be examined and evaluated by the Advisory Committee, Experts Groups/Committee and Working Groups, then recommended by the Environment Appraisal Committee. The decision will be made within three months after the submission of the documents.

The necessary documents are the information on development plans such as: (a) Environmental Impact Statement (EIS)/Environmental Management Plans (EMP), (b) Feasibility/Detailed Project Report, (c) Inquiries prepared by the Ministry/Check List.

- EIS/EMP
- Feasibility/Detailed Project Report
- Inquires/Check List

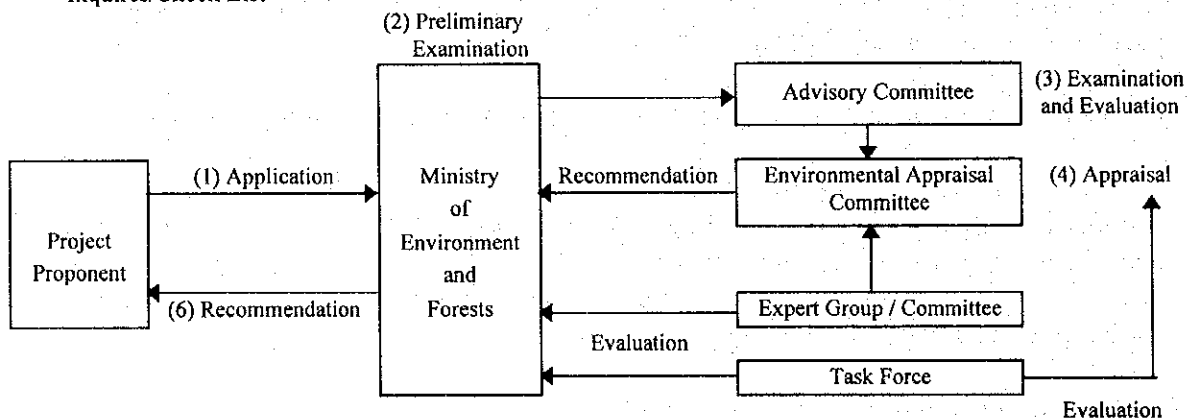


Fig 12.6.2 : Flow Chart of Environmental Impact Assessment (EIA)

12.7 Conclusion

The primary concern on social environment for this project, land acquisition, is a responsibility of the Haryana State Government and will be carried out by the State Government. The project implementation will start at the point when the State Government has smoothly completed the land acquisition. In executing land acquisition, extensive support of the State Government is required to render sufficient economic assistance for those farmers who lose the basis of their livelihood through land acquisition, and the preparation of training facilities and the system that backup such assistance to help those farmers who want to shift to factory workers.

To avoid the appearance of slums both the preparation of accommodations for construction workers within the IMT and the establishment of necessary measures to control the emergence of slums around the site, is required.

It is desirable that the social and natural environmental problems on the IMT be studied as an integrated part of the large scale urban development plans that are undergoing in the Gurgaon District under "Regional Plan 2001-National Capital Region"; and HSIDC (Haryana State Industrial Development Corporation), HUDA (Haryana Urban Development Authority) and the private sector.

The ongoing large scale development in the Gurgaon District by HUDA, HSIDC and the private sector includes a residential section, public facilities section such as hospitals and schools, large scale shopping centers and an industrial section. The total population after the completion of this development to be is 400,000 people. The implementation of such large scale development will inevitably bring a dramatic change to the social and natural environment of the neighbouring areas of the IMT.

The "Regional Plan 2001", stipulate the establishment of green belts of 100 meters in width on both sides of the national highways in the developing areas. Although it is certain that if this policy is carried out without fail, the air pollution by exhaust gases from land traffic and noise will be greatly reduced. The direct and indirect impacts of such enormous scale development may be difficult to measure at this point.

Consequently, in addition to the carrying out of the Environment Impact Assessment, a detailed study of Aravalli Natural Preservation is recommended. Further, it is desirable to conduct an integrated environmental impact assessment upon the determination of the kinds and number of industries that will join the IMT and the industrial section of the large scale development of Gurgaon District, and work out appropriate countermeasures accordingly.

Chapter 13

Conclusions and Recommendations

Chapter 13 Conclusion and Recommendations

13.1 Conclusion

- (1) Judging from the results of the economic analysis, the economic viability of the Project is high.
- (2) The feasibility of the Industrial Town in Gurgaon of Haryana State based on the IMT development concept has been confirmed subject to the realization of several requirements as described below. Effective and timely achievement of these requirements is necessary for implementation of the IMT project.

13.2 Recommendations

There are many important matters to be resolved for successful implementation of the IMT. These matters should be studied and then implementation should be planned and executed in a timely manner. Matters to be resolved during the project preparation stage and those required for project commencement are discussed as follows:

13.2.1 Requirements during Project Preparation Stage

- (1) Financial arrangement for land acquisition

Complicated legal procedures are required for land acquisition, which is the first step for the implementation of the IMT. It is anticipated that the land acquisition will be carried out by the legal procedures according to the Land Acquisition Act. The State government has issued the second notification on November 15, 1994 and the land acquisition is expected to be completed by May 1995.

In case the State or Central government is not able to allocate the necessary budget for land acquisition, it might be necessary to borrow money from domestic financial institutions.

- (2) Setting of implementation agencies

The following implementation agencies have been selected as a result of Chapter 7 (Development Methodology of the IMT) and Chapter 11 (Financial and Economic Evaluation).

Regarding land preparation and infrastructure development, it was decided to adopt third sector development based on the results of the examination of the relative priorities on the development and demand sides.

Regarding power, it was decided to adopt development by the state government as a result of the financial and economic analysis. Regarding housing, it was decided to adopt joint development by the state government and the private sector, again as a result of the financial and economic analysis. Concerning water supply and sewage works, development led by the state government is desirable, because revenue from service charges cannot cover the works

costs.

The expected development system shall therefore be a slight modification of Case 2 from Chapter 7.

IMT facilities		Implementing Agency		
		State Government	Third Sector	Private Sector
Land Acquisition		○		
Infrastructure and public utility facilities outside of the IMT		○		
Land development and infrastructure preparation			○	
Power		○		
Housing	High density housing (4 floors), and EWS housing	○		
	High density housing (10 floors) and medium density housing			○
Commercial facilities (Shopping centers)				○

Generally speaking, the third sector system involves the establishment of an organization that it is hoped will allow the joint effects of the public and private sectors. Providing the divided duties function according to plan, the benefits will be sustained.

However, difficult leadership is often required due to joint operation by organizations that possess different characters. It is important that the parties concerned have good mutual understanding and also obtain the cooperation of specialists etc., who possess experience in and knowledge of industrial estate development and operation, in order to ensure smooth management and operation.

(3) Supply of gas

In order to maintain an international level of infrastructure, a captive power generation plant for the IMT is to be installed.

Natural gas is the fuel for the power plant. Demand for gas is high in the vicinity of Delhi and adjustment of the gas supply plan for other projects may be necessary. If the gas supply is not reliable, the planned power plant cannot be realized.

Priority should be given to gas supply for the IMT from the point of view of this project being ranked as a national project.

(4) Study of phased construction method

The Indian side strongly intends to realize this project as soon as possible, taking into

consideration the present favourable conditions for foreign direct investment in India. Early implementation is also desirable since there is a risk that other industrial estates will be developed in the meantime, affecting demand for the IMT.

However, project cost would be substantial, therefore phased construction is desirable for implementation, especially from the cash flow point of view. The project realization is very sensitive to both the world economy and investor's interest. For this reason, the implementing agency is required to study phased construction taking into consideration the result of the investment demand survey in this study.

(5) Additional survey and mapping

It is pointed out that topographical maps used for this study are old and are not sufficient in detail. The present conditions are not reflected. An accurate field survey of the topography and the boundaries of acquired land is required for checking before implementation.

Some modification of the land use plan and design changes may be required due to the results of the topographical survey. In this case, quick action should be taken to avoid any delay in project implementation.

(6) Relocation of crematory

A crematory along NH-8 for common use of nearby villages was found during the second field survey. According to Indian regulations, removal or relocation of this type of religious facility is not permitted.

The State Government, however, intends to proceed with relocation of the crematory in due course by negotiation with the surrounding inhabitants. It is preferable to confirm this principle of relocating the crematory to another place for proper development of the IMT.

13.2.2 Requirements for Project Commencement

(1) Improvement of National Highway (NH - 8)

According to information given by the Ministry of Surface Transport (MOST), expansion of NH - 8 from two lanes to four lanes will start with funding from the ADB in early 1996.

Expansion works of NH - 8 would effectively solve the problem of increasing traffic volume in the short-term at least and implementation at the soonest possible date is highly desirable from the viewpoint that a well established infrastructure would appeal to potential investors.

(2) Active action for investment promotion

Introduction of foreign companies to the IMT should be actively made using for example investment promotion seminars to attract potential foreign investors. This action should be immediately taken after the establishment of an implementation organization. Details of investment promotion activities should be prepared by the implementation organization. If required, foreign experts in investment should be recommended as an effective measure for

promotion.

(3) Implementation of environment impact assessment

The Aravali Natural Reserve Area and the Sultanpur bird sanctuary are near the IMT site.

Large development projects, larger than the IMT, are to be implemented and further expanded in the future near the IMT site. The impact that these large scale developments will have on the reserved lands requires implementation of an environment impact assessment, which should be prepared after drafting of the comprehensive development plans for Gurgaon.

(4) Preventive measures against formation of slums

There is concern about the formation of unplanned and unauthorized slums, shops and market places around the IMT site during and after the construction of the IMT. In order to prevent the emergence of such slums, the implementing agency for the IMT should provide low cost housing and shops and restaurants (canteens) of reasonable standard to the workers engaged during the construction stage of the IMT. Government controls on unauthorized developments should be enforced during implementation of the IMT.

(5) Enforcement of single window services

No special incentives except those for the existing industrial estates in Haryana, are given for the IMT. The Indian side including other states emphasize the ability to provide services for foreign investors through a single window service. However, improvement and enhancement of the provided services are required as foreign enterprises do not fully appreciate the existing services.

The single window should supply sufficient services to companies requiring an investment permit, and should also support establishment and production activity in the initial stages.

(6) Expansion and reinforcement of training institute

According to interviews with Japanese manufacturers located around Gurgaon, each company employs skilled workers who are graduates from the Industrial Training Institute (ITI) at Gurgaon.

There are many applicants for the existing ITI, however, the existing facility has limited capacity and educational materials are very old. From these existing conditions, it is judged that technical training should be provided in the IMT.

Furthermore, provision of training for inhabitants who will be displaced from acquired agricultural land is important from the viewpoint of social welfare and employment creation.

The provision of adequate numbers of trained people will be a significant advantage to companies establishing in the IMT as it will avoid steep increases in salary due to manpower shortages.

APPENDIX



APPENDIX I

Members of the Steering Committee

1. Shri M.C.Gupta, Chairman
Secretary
Department of Industrial Development
2. Planning Commission
Shri N.Mohanty
Advisor (I & M)
Yojana Bhavan,
Parliament Street, New Delhi.
3. Ministry of External Affairs,
Shri R.S.Kalha,
Joint Secretary, (Japan)
South Block, New Delhi.
4. Ministry of Finance
Deptt. of Economic Affairs
Mrs. Rama Murali,
Joint Secretary
North Block, New Delhi.
5. Ministry of Urban Development
Shri K. Dharmarajan,
Joint Secretary
Nirman Bhavan, New Delhi.
6. Ministry of Urban Development
Shri T.George Joseph,
Joint Secretary
Paryavaran Bhavan, CGO Complex,
Lodi Road, New Delhi.
7. Government of Haryana,
Shri R.S.Malik,
Secretary (Industries)
8. Shri S. Sridhar, GM,
Export Import Bank of India
Jeevan Bharati
Connaught Place, New Delhi.

9. Shri Lahiri, GM,
Industrial Development Bank of India
Research & Plann. Deptt. Cuffe Parade, Colaba, Bombay.

10. Shri S. Sen,
Sr. Director
CII, Lodi Road, New Delhi.

11. Shri P.C.Chaturvedi,
Joint Secretary
Deptt. of Industrial Development ...Member Secretary

12. Mr. Ashok Lavasa
Managing Director
Haryana State Industrial Development Corporation

LIST OF COUNTERPARTS

Designation and telephone nos. of the members of Core Group who would be interacting with the team of JICA for preparation of feasibility study report Industrial Model Township, Manesar, District Gurgaon.

	<u>Coordinators</u>	<u>Core Group</u>	<u>Tel. No.</u>
1. Industrial Site Planning	Sh. Pradeep Kumar, IAS Commissioner Town & Country Planning Tel. No. 0172-540133	Sh. B.K. Gulati, CTP/NCR, Gurgaon Sh. Vijay Vardhan, IAS, Administrator, HUDA, Gurgaon.	8320171 8321650
		Sh. B.K. Sharma Addl. GM/HSIDC	8341104
2. Investment Demand Analysis (A)	Sh. N.K.Jain, IAS Director Industries Tel No. 0172-541344	Sh. K.L.Dhingra, GM (F)/HSIDC Sh. P.K. Tripathi GM (CA)	0172-543671-74 3347681-82
	Sh. Ashok Lavasa, IAS MD/HSIDC Tel. No. 0172-544153		
	Sh. Ajit M. Sharan, IAS MD/HFC Tel. No. 0172-543096		
	Sh. R.N.Prasher, IAS MD/HARTRON Tel. No. 0172-544922		
3. Investment demand analysis (B)	-do-	-do-	
4. Urban Planning & Development	Sh. V.N.Shah, Chief Architect, Haryana Tel. No. 0172-544243	Sh. Vijay Vardhan, IAS Administrator, HUDA, Gurgaon	8321650
		Sh. B.K.Gulati, CTP/NCR, Gurgaon	8320171
		Sh. J.L.Malhotra, DGM/HSIDC	8341104
5. Infrastructure Plg. (Transportation, Traffic and Land-use)	Sh. R.S.Gujral, IAS Transport Commissioner Tel. No. 0172-541364	Sh. K.L.Munjaj SE, PWD, B&R, GGN	8321494
	Sh. M.K.Aggarwal, Engineer-in-Chief, PWD (B&R) Tel. No. 0172-44985	CTP/NCR DGM/HSIDC	
6. -do-	-do-	-do-	

7. Infrastructure Planning (Water Supply & Sewage)	Sh. Gurdip Singh EIC (Public Health) Tel. No. 0172-42711	Sh. B.R.Batra SE/Public Health DGM/HSIDC	8320988
8. Infrastructure Planning (Elec.) & Telecommunication.	Sh. V.P.Mathur, CE, HSEB, Chandigarh Tel. No. 0172-5418071	Sh. Surjit Kumar SE, HSEB, Gurgaon Sh. R.C.Hooda, Director (Telecom) Govt. of India	8322427 8327000
	Sh. M.L.Chawla, Member-Tech. (OP) HSEB, Tel. No. 0172-560564		
9. Operation & Management of IMT	Sh. Bhaskar Chatterjee, IAS MD/HSIDC, CA/HUDA, Tel. No. 0172-541344		
	Sh. N.K.Jain, IAS DI Tel. No. 0172-541344		
10. Ind. Pollution Control	Sh. S.P.Grover, Chairman Haryana State Pollution Control Board Tel. No. 0172-564211		
11. Social Environmental Assessment.	Sh. T.R.Sharma, IAS DC/Gurgaon Tel. No. 0172-541266	Sh. M.P.Bidlan, IAS DC/Gurgaon Sh. R.K.Khullar, IAS ADC/Gurgaon	8321144 8322211
12. Economic/Financial Analysis	Sh. Ashok Lavasa, IAS MD/HSIDC	Sh. K.L.Dhingra GM (F), HSIDC Sh. P.K.Tripathi, GM (CA)/JAG	

Tel. Nos.

1. Mr. M.C.Gupta, Chief Secretary, 0172-540188 & 540944 (Chandigarh)
011-383654, 386131 (Delhi)
2. Mr. Dhanendra Kumar, PS to CM 0172-540774 & 540945 (Chandigarh)
011-381030 & 386131 (Delhi)
3. Mr. R.S.Malik, Commissioner & Secretary Industries 0172-540817

HSIDC GUEST HOUSE, NEW DELHI - 011 - 6492314

List of JICA Study Team Members

Assignment		Name and Company
1)	Team Leader	Mr. Hisashi KUROKOUCHI Yachiyo Engineering Co., Ltd.
2)	Investment Promotion and Deputy Team Leader	Mr. Masaaki UEDA Yachiyo Engineering Co., Ltd.
3)	Industrial Site Planning	Mr. Sueo MIKI Yachiyo Engineering Co., Ltd.
4)	Industrial Site Planning	Mr. Tatsuo HOKUGO Yachiyo Engineering Co., Ltd.
5)	Investment Demand Analysis (A)	Mr. Akinori HASHIMOTO Techno Consultants Inc.
6)	Investment Demand Analysis (B)	Mr. Yasuo SHIMIZU Techno Consultants Inc.
7)	Urban Planning and Development	Mr. Toshihide KONDO Yachiyo Engineering Co., Ltd.
8)	Infrastructure Development (Transportation, Traffic and Land-Use)	Mr. John HAMILTON Yachiyo Engineering Co., Ltd.
9)	Infrastructure Development (Transportation, Traffic and Land-Use)	Dr. Ravinder KATIYAR Yachiyo Engineering Co., Ltd.
10)	Infrastructure Development (Water Supply and Sewage Treatment)	Mr. Tahei INOUE Techno Consultants Inc.
11)	Infrastructure Development (Electricity and Telecommunications)	Mr. Yutaka MURAKI Yachiyo Engineering Co., Ltd.
12)	Operation and Management of IMT	Mr. Hideo YAMADA Yachiyo Engineering Co., Ltd.
13)	Industrial Pollution Control	Mr. Takehiko IMAI Yachiyo Engineering Co., Ltd.
14)	Social Environmental Assessment	Ms. Sonoe YAMADA Yachiyo Engineering Co., Ltd.
15)	Economic and Financial Analysis	Mr. Yoshitaka IMAEDA Techno Consultants Inc.

APPENDIX II

Annex I

List of Industries reserved for the public sector

1. Arms and ammunition and allied items of defence equipment, defence aircraft and warships.
2. Atomic energy.
3. Coal and Lignite.
4. Mineral oils.
5. Minerals specified in the Schedule to the Atomic Energy (Control of Production and Use) Order, 1953.
6. Railway transport.

Annex II

List of industries for which industrial licensing is compulsory

1. Coal and Lignite
2. Petroleum (other than crude) and its distillation products.
3. Distillation and brewing of alcoholic drinks.
4. Sugar
5. Animal fats and oils.
6. Cigars and cigarettes of tobacco and manufactured tobacco substitutes.
7. Asbestos and asbestos-based products.
8. Plywood, decorative veneers, and other wood based products such as particle board, medium density fibre board/block board.
9. Tanned or dressed furskins, chamois leather.
10. Paper and Newsprint except bagasse-based units.
11. Electronic aerospace and defence equipment; all types.
12. Industrial explosives including detonating fuses, safety fuses, gun powder, nitrocellulose and matches.
13. Hazardous chemicals.
14. Drugs and Pharmaceuticals (according to Drug Policy).
15. Entertainment Electronics (VCRs, Colour TVs, C.D. players, Tape recorders).

Annex III

List of industries eligible for automatic approval of foreign technology agreements and 51% foreign equity

1. Metallurgical Industries.

- (i) Ferro Alloys.
- (ii) Casting and forging.
- (iii) Non-ferrous metals and their alloys.
- (iv) Sponge iron and pelletisation.
- (v) Large diameter steel welded pipes of over 300 mm diameter and stainless steel pipes.
- (vi) Pig iron.

2. Boilers and Steam Generating Plants.

3. Prime Movers (other than Electrical Generators).

- (i) Industrial turbines.
- (ii) Internal combustion engines.
- (iii) Alternate energy systems like solar wind etc. and equipment therefor.
- (iv) Gas/Hydro/Steam turbines upto 60 MW.

4. Electrical Equipment.

- (i) Equipment for transmission and distribution of electricity including power and distribution transformers, power relays, HT-switch gear synchronous condensers.
- (ii) Electrical motors.
- (iii) Electrical furnaces, industrial furnaces and induction heating equipment.
- (iv) X-ray equipment.
- (v) Electronic equipment, components including subscribers' and telecommunication equipment.
- (vi) Component wires for manufacture of lead-in wires.
- (vii) Hydro/Steam/Gas generators/generating sets upto 60 MW.
- (viii) Generating sets and pumping sets based on internal combustion engines.
- (ix) Jelly-filled telecommunication cables.
- (x) Optic-fibre.
- (xi) Energy efficient lamps; and
- (xii) Midget carbon electrodes.

5. Transportation.

- (i) Mechanized sailing vessels upto 10,000 DWT including fishing trawlers.
- (ii) Ship Ancillaries.
- (iii) (a) Commercial vehicles, public transport vehicles including automotive commercial three wheeler jeep type vehicles, industrial locomotives.

- (b) Automotive two wheelers and three wheelers.
- (c) Automotive components/spares and ancillaries.
- (iv) Shock absorbers for railway equipment; and
- (v) Brake system for railway stock and locomotives.

6. Industrial Machinery.

- (i) Industrial machinery and equipment.
- 7.
- (i) Machine tools and industrial robots and their controls and accessories.
 - (ii) Jigs, fixtures, tools and dies of specialized types and cross land tooling; and
 - (iii) Engineering production aids such as cutting & forming tools, patterns & dies & tools.

8. Agricultural Machinery.

- (i) Tractors
- (ii) Self-propelled harvester combines.
- (iii) Rice transplanters.

9. Earth Moving Machinery.

- (i) Earth moving machinery and construction machinery and components thereof.

10. Industrial Instruments.

- (i) Indicating, recording and regulating devices for pressure, temperature, rate of flow, weights levels and the like.

11. Scientific and Electromedical Instruments and Laboratory Equipment.

12. Nitrogenous and Phosphatic Fertilizers falling under

- (i) Inorganic Fertilizers under '18-Fertilizers' in the First Schedule to IDR Act, 1951.

13. Chemicals (other than fertilizers).

- (i) Heavy organic chemicals including petrochemicals.
- (ii) Heavy inorganic chemicals.
- (iii) Organic fine chemicals.
- (iv) Synthetic resins and plastics.
- (v) Man made fibres.
- (vi) Synthetic rubber.
- (viii) Technical grade insecticides, fungicides, weedicides and the like.
- (ix) Synthetic detergents.

- (x) **Miscellaneous chemicals (for industrial use only)**
 - (a) Catalysts and catalyst supports.
 - (b) Photographic chemicals.
 - (c) Rubber chemicals.
 - (d) Polyols.
 - (e) Isocyanates, urethanes, etc.
 - (f) Specialty chemicals for enhanced oil recovery.
 - (g) Heating fluids.
 - (h) Coal tar distillation and products therefrom.
 - (i) Tonnage plants for the manufacture of industrial gases.
 - (j) High altitude breathing oxygen/medical oxygen.
 - (k) Nitrous oxide.
 - (l) Refrigerants gases like liquid nitrogen, carbondioxide etc. in large volumes.
 - (m) Argon and other rare gases.
 - (n) Alkali/acid resisting cement compound.
 - (o) Leather chemicals and auxiliaries.

14. Drugs and Pharmaceuticals (According to Drug Policy).

- 15.
 - (i) Paper and pulp including paper products.
 - (ii) Industrial laminates.
- 16.
 - (i) Automobile tires and tubes.
 - (ii) Rubberized heavy duty industrial belting of all types.
 - (iii) Rubberized conveyor belting.
 - (iv) Rubber reinforced and lined fire fighting hose pipes.
 - (v) High pressure braided hoses.
 - (vi) Engineering and industrial plastic products.

17. Plate Glass.

- (i) Glass shells for television tubes.
- (ii) Float glass and plate glass.
- (iii) H.T. insulators.
- (iv) Glass fibres of all types.

18. Ceramics.

- (i) Ceramics for industrial uses.

19. Cement Products.

- (i) Portland cement.
- (ii) Gypsum boards, wall boards and the like.

20. High Technology Reproduction and Multiplication Equipment.

21. Carbon and Carbon Products.

- (i) Graphite electrodes and anodes.
- (ii) Impervious graphite blocks and sheets.

22. Pretensioned High Pressure RCC Pipes.

23. Rubber Machinery.

24. Printing Machinery.

25. Welding Electrodes other than those for Welding Mild Steel.

26. Industrial Synthetic Diamonds.

- 27.
- (i) Photosynthesis improvers.
 - (ii) Genetically modified free living symbiotic nitrogen fixer.
 - (iii) Pheromones.
 - (iv) Bio-insecticides.

28. Extraction and Upgrading of Minor Oils.

29. Pre-fabricated Building Material.

30. Soya Products.

- (i) Soya texture proteins.
- (ii) Soya protein isolates.
- (iii) Soya protein concentrates
- (iv) Other specified products of soyabean.
- (v) Winterized and deodorized refined soyabean oil.

- 31.
- (i) Certified high yielding hybrid seeds and synthetic seeds, and
 - (ii) Certified high yielding plantlets developed through plant tissue culture.

32. All food processing industries other than milk food, malted foods, and flour, but excluding the items reserved for Small-scale sector.

33. All items of packaging for food processing industries excluding the items reserved for small-scale sector.

34. Hotels and tourism-related industry.

35. Electronics Software.

Annex IV

List of Consumer Goods Industries where Dividend Balancing is required.

1. Manufacture of food and food products.
2. Manufacture of dairy products.
3. Grain Mill products.
4. Manufacture of bakery products.
5. Manufacture and refining of sugar (vacuum pan sugar factories).
6. Production of common salt.
7. Manufacture of hydrogenerated oil (vanaspati).
8. Tea processing.
9. Coffee.
10. Manufacture of beverages, tobacco and tobacco products.
11. Distilling, rectifying and blending of spirits, wine industries, malt liquors and malt, production of country liquors and toddy.
12. Soft drinks and carbonated water industry.
13. Manufacture of cigars, cigarettes, cheroot and cigarette tobacco.
14. Manufacture of wood and wood products, furniture and fixtures.
15. Manufacture of leather and fur/leather products.
16. Tanning, curing, finishing, embossing and japanning of leather.
17. Manufacture of footwear (excluding repair) except vulcanized or moulded rubber or plastic footwear.
18. Manufacture of footwear made primarily of vulcanized or moulded products.
19. Prophylactics (rubber contraceptive).
20. Motor cars.
21. Entertainment Electronics (VCRs, Colour TVs, CD players, Tape Recorders).

22. White Goods (Domestic Refrigerators, Domestic Dishwashing Machines, Programmable Domestic Washing Machines, Microwave Ovens, Airconditioners).

APPENDIX III

Large and Medium Size Industrial Units in Gurgaon and their Characteristics

Name of Companies	Address	Item Manufactured	Employee	Land Use (Acres)	Build-Up Area (Acres)	Share of Build-Up Area (%)
1. Anand Gases Ltd.	Maruti Indl. Complex, Plot No.16, Gurgaon	Industrial Gases	42	3.00	2.00	66.7
2. Batra Handling & Processing Engineers Ltd.	Ph-I, UV, Gurgaon	Material Handling Equipment	30	5.00	1.05	21.0
3. Bar Malt India Ltd.	Jharsa	Malt & Malt Extraction	200	10.00	6.20	62.0
4. Continental Valve Ltd.	P.No.2 & 10, Rozka Mec.	Control Valve	84	5.00	3.00	60.0
5. Dominant Offset Pvt. Ltd.	Delhi Road, Gurgaon	Offset Printing Machine	300	4.50	2.00	44.4
6. D.H. Woodhead Ltd.	Rozka Meo	Shock Observer	90	5.00	3.00	60.0
7. IST Ltd.	Delhi Road, Gurgaon	Wrist Watches	450	8.00	4.50	56.3
8. IDPL	Delhi Road, Gurgaon	Drug Formulation	631	15.00	8.00	53.3
9. Maruti Udyog Ltd.	Delhi Road, Gurgaon	Cars/Van/Gypsy.	3,993	297.00	40.00	13.5
10. Munjal Sowa Ltd.	Gurgaon	Shock Absorber	373	6.00	4.50	75.0
11. Purolator India Ltd.	IDC,MR, Gurgaon	Filters	90	1.00	0.60	60.0
12. Matlex India P. Ltd.	Delhi Road, Gurgaon	Polyester Films	675	2.00	1.50	75.0
13. O.H. Talbros Ltd.	Ph-III, UV, Gurgaon	Tie Rods	490	1.00	0.60	60.0
14. Ramsons India Ltd.	Gurgaon	Cables	83	2.00	1.20	60.0
15. Sunbeam Castings Ltd.	Gurgaon	Aluminium Castings	415	2.50	1.80	72.0
16. Sona Steering Ltd.	Gurgaon	Steerings	120	6.00	4.00	66.7
17. Kayam Food Ind.	Bajghera Road, Gurgaon	Corn Flanks	56	8.00	6.00	75.0
18. Carrier Air Cone Ltd.	Gurgaon	Air Conditioner	416	6.00	5.00	83.3
19. Gaberial India Ltd.	Chander Nagar, Gurgaon	Shock Absorber	35	0.50	0.50	100.0
20. Babber Oil Tools Ltd.	Kherki Daula	Oil Tools	35	7.00	5.00	71.4
21. Arvind-Synthetic Chemicals Pvt. Ltd.	New Colony, Gurgaon	Chemicals	50	0.25	0.22	88.0
22. Amtek Auto Ltd.	Sohna	Connected Rods	120	0.25	0.22	88.0
23. Hind Protective Coating Ltd.	Rozka Meo	Pipes (Water)	90	0.74	0.37	50.0
24. Enrichi Agro Food Products Pvt. Ltd.	Ph-II, UV, Gurgaon	Cold Drinks	110	2.00	1.75	87.5
25. Bandha Machinery Pvt. Ltd.	M.C. Gurgaon	Printing Machine	100	3.00	1.80	60.0
26. Inter Press Publishers	Ph-I, UV, Gurgaon	News Paper	35	1.00	0.80	80.0

Name of Companies	Address	Item Manufactured	Employee	Land Use (Acres)	Build-Up Area (Acres)	Share of Build-Up Area (%)
27. Mark Auto Ltd., Joint Venture	Maruti Complex, Gurgaon	Sheet Metal Components	223	2.50	1.75	70.0
28. Atlas Tube Industries	Ph-IV, Gurgaon	Cycle Steel Tubes	117	5.00	2.60	52.0
29. Lumax Industries, Multi Complex	Gurgaon	Auto Lights	220	2.00	1.60	80.0
30. Jai Bharat Maruti Udyog	Gurgaon	Sheet Metal Components	294	5.00	4.00	80.0
31. Sun Vacuum Formers P.Ltd.	Maruti Complex, Gurgaon	Injection Moulding, Items for Maruti	33	0.74	0.54	73.0
32. Bharat Sheet Ltd., Joint Vent.	Maruti Complex, Gurgaon	Car Sheets	364	4.00	3.00	75.0
33. Machino Plast Ltd.	Maruti Complex, Gurgaon	Plastic Items for Maruti	66	3.00	2.25	73.3
34. A.K.G. Aquatic Ltd.	Ph-I, UV, Gurgaon	Electronic Items	145	0.49	0.37	75.5
35. Malt Co. India (P) Ltd.	Khandasa Rd., Gurgaon	Malt & Malt Extracts	129	12.00	7.00	58.3
36. Enexco India Pvt.	Ph-III, UV, Gurgaon	Engg./Packing/Loading Machine	83	0.49	0.40	81.6
37. Cebon India Ltd.	M.C.Gurgaon	Pharmaceuticals Items	80	2.00	1.60	80.0
38. Jai Yashin Ltd.	M.C.Gurgaon	Locks & Keys for Maruti	250	2.00	1.65	82.5
39. Bharti Telecom Ltd.	Plot No.4, Ph-I,UV,GGN	Push Button Telephone	174	0.99	0.84	84.8
40. Auto Max Unit of M/S Omax Auto Ltd.	Tikri	Sheet Metal Components	157	3.00	2.00	66.7
41. Munters India Ltd.	Behrampur Rd. Khandasa	PVC Pipes Mist eliminator, PVC Rigid Pipes	40	7.00	2.50	35.7
42. Intron Ltd.	7, Maruti Complex, GGN	Washing Machine	150	3.00	1.85	61.7
43. Consolidated Radiators	Ph-I, UV, Gurgaon	Auto Radiators	64	0.25	0.23	92.0
44. Lasers Lamps (Haryana)	121, Rozka Meo	Auto Lamps	30	5.00	0.25	50.0
45. IBP Co.,Ltd.	Manesar Rd. Vill. Manesar, Gurgaon	Cost Boosters, Detenating Fues	112	74.00	10.00	13.5
46. IBP Co.,Ltd (Unit No.1)	Manesar Rd. Vill. Manesar, Gurgaon	Shaped Charged Accessories	50			
47. Metlax Ceramics Ltd.	MIC, Gurgaon	Glazed Tiles & Floor Tiles	96	2.00	1.50	75.0
48. Riashabh Food Industries	Village Palla	Break Fast Items	54	15.00	8.00	53.3
49. M&M Auto Industries Pvt.Ltd.	Khandasa Road, Gurgaon	Springs	23	1.00	0.89	89.0
50. Green Fields Process Pvt.Ltd.	Jaiper Road, Gurgaon	Potato Wafers	60	1.00	0.89	89.0
51. Aditya Polytech Pvt.Ltd.	Vill. Chundhika, Tauru	Twisting of Yarn	31	2.00	1.20	66.7

Name of Companies	Address	Item Manufactured	Employee	Land Use (Acres)	Build-Up Area (Acres)	Share of Build-Up Area (%)
52. Indo Nippon Food Pvt.Ltd.	Maruti Complex, Gurgaon	Milk Products	29	2.00	1.60	80.0
53. Arplast Adhesives Pvt.Ltd.	Rozka Meo	Self Adhesives	25	2.00	1.60	80.0
54. AVL India Ltd.	UV,Ph-IV, Gurgaon	Automatic Testing Equip. for Automobiles	47	2.00	1.60	80.0
55. D.C.M. Data Products	Plot No. 373-374, Ph-IV, UV, Gurgaon	Computer & Allied Products	55	1.00	0.37	37.0
56. Clasic Dials P.Ltd.	Ph-II, UV, Gurgaon	Ornamental Dials	89	0.25	0.20	80.0
57. Hartnon Communication Ltd.	P.No.244-45,Ph-IV, UV,GGN	Electronic Items	89	2.00	1.20	60.0
58. Acyapure Containers Ltd.	Rozka Meo	Plastic Containers, Toys & Water Tanks	29	2.00	1.60	80.0
59. Walespun Poly Buttons P. Ltd.	Behrampur Rd.Khnadsa,GGN	Polyester Buttons	89	0.86	0.79	91.9
60. Omax Fusions Ltd.	Behrampur Rd.,Khandsa	Mig Welding Wire	50	2.00	0.74	37.0
61. Rani Polymers	202, Ph-I,UV,Gurgaon	Plastic Moulded Components	25	0.25	0.20	80.0
62. C.G.Harman & Brown Ltd.	Plot No.20,Sec-18, GGN	Electronic & Electrical Meters	25	1.00	0.49	49.0
63. Sandhar Locking Devices	Muruti Complex, Gurgaon	Rear Back View Mirrors	150	2.00	1.80	90.0
64. Sham Antena Electronic	P.No.246,UV,Gurgaon	Radio Communication Receivers	32	1.50	1.00	66.7
65. Inalsa Ltd.	Ph-III, UV, Gurgaon	Flexible Corrugated Hoses	44	1.00	0.74	74.0
66. Sham Telecom. Ltd.	Plot No.246,Ph-IV, GGN	Communication Systems	205	1.50	1.00	66.7
67. Bhurji Super Tech.	P.No.272,Ph-II, UV,GGN	Plastic Moulded Components	20	1.00	0.89	89.0
68. HPL Socomec(P) Ltd.	P.No.248, Ph-I,UV,GGN	Control Peneals Accessories	8	0.13	0.12	92.3
69. Continental Engine Ltd.	P.No.240-41,Ph-IV,GGN	Engine Parts	41	2.00	0.74	37.0
70. Bajaj Motors Pvt. Ltd.	P.No.214,Ph-I,UV,GGN	Auto Parts	87	0.77	0.49	63.6
71. Modi Alkatel	Sec-18, GGN	Electronic Items	98	10.00	6.00	60.0
72. R.S. Lables	198, Ph-IV, UV, GGN	Lables	8	0.12	0.10	83.3
73. Paricol Ltd.	P.No.267,Ph-II,UV,GGN	Auto Meters & Auto Meters Cables	96	2.00	1.60	80.0
74. Chawla Enterprises P.Ltd.	Unit-II,P.No.186 Sec,GGN	Quarts Clock	80	2.00	1.80	90.0

Name of Companies	Address	Item Manufactured	Employee	Land Use (Acres)	Build-Up Area (Acres)	Share of Build-Up Area (%)
75. Jwala Textile Ltd.	Delhi Rd, GGN	Yarn	850	12.00	9.00	75.0
76. A.G. Industries Pvt.Ltd.	Sec-18, GGN	Moulded Components	12	1.00	0.79	79.0
77. Pasupati Techno Fab Ltd.	Rozka Meo	H.M.& Cotton Fabrics	111	1.00	0.74	74.0
78. Innovative Tech P.Ltd.	P.No.51 Rozka Meo	Packing Material	40	1.00	0.69	69.0
79. Altos India Ltd.	279, Ph-II, UV, GGN	Computer	154	0.49	0.44	89.8
80. Usha Matra Ltd.	486-87, Ph-III, UV, GGN	Software	35	0.49	0.40	81.6
81. Manak Shoes Co.P.Ltd.	244 Ph-I, UV, GGN	Shoes	504	7.00	4.00	57.1
82. Kailash Ribbon Factory Ltd.	403, Ph-III, UNV, GGN	Woven Lahles	25	0.25	0.19	76.0
83. Basal Machine Tools	P.No.289, Ph-II, UV, GGN	Auto Parts	19	0.49	0.27	55.1
84. Aero Space	235, Ph-II, UV, GGN	Balloons	10	0.12	0.10	83.3
85. Hindustan General Industries	270, Ph-II, UV, GGN	CD.Batteries	19	2.00	0.20	10.0
86. Microplus P.Ltd.	286, Ph-II, UV, GGN	Narrow Woven Fabrics	49	1.00	0.74	74.0
87. Gapp's Industries	Khandsa Rd, GGN	Polyester Zip Fasteners	79	3.00	1.50	50.0
88. Haryana Auto Castings P.Ltd.	Rozka Meo	Castings	15	1.00	0.25	25.0
89. Universal Electronics & Communication P.Ltd.	238, Ph-I, UV, GGN	Telephone & Electrical Accessories	20	1.98	0.74	37.4
90. Vimal Moulders (India) Pvt.Ltd	P.No.17-18, Ph-IV, UV, GGN	Plastic Moulded Items	10	0.49	0.40	81.6
91. Rai Prexim (India) Pvt. Ltd.	P.No.23, Ph-IV, GGN	Crank Shaft	15	0.25	0.20	80.0
92. Kavita Lables (India) Pvt.Ltd.	272, Ph-IV, UV, GGN	Woven Lables	7	0.12	0.11	91.7
93. Toscana Shoes	NH. GGN	Shoes & Shoe Uppers	339	1.24	0.49	39.5
94. Jyotika Granite, N.H.	Delhi Jaipur Highway Rd.	Granite Slates	30	2.00	1.20	60.0
95. Sarvpriya	38, National Highway, GGN	Seat Covers	35	4.00	1.00	25.0
96. World Wide Leather Products	Behrampur Rd., GGN	Leather Goods	45	0.74	0.39	52.7
97. Jeray India Pvt.Ltd.	Kharki Dauba, GGN	Cotton Cloths	89	7.00	5.00	71.4
98. Winter Micro Diamond Tools Ltd	4, IBC, MR, GGN	Diamond Cutting Tools	25	1.00	0.74	74.0
99. Raghurib Machinery P.Ltd.	Jaipur National Highway No.8, GGN	Offset Printing Machinery	124	5.00	3.00	60.0
100. Hansa Flon Plastic Chem Ltd.	9KM, GGN-Based Rd, Opp. Grace Vihar, Block Parrukh Nagar	Non Stick Plastic Coating (PTFE Coatings)	20	6.00	3.18	53.0
TOTAL			16,240	655.24	224.95	(37.4)

Note: UV=Udyog Vihar, GGN=Gurgaon; Source: HSIDC

Appendix IV

Comparison between "Evaluation of Investment Possibility" in Chapter 6 and "Secondary Evaluation for Selection of Suitable Industries" in Chapter 7

Type of businesses in Japanese codes	SIC code	Evaluation in Chapter 6				Evaluation in Chapter 7 (Evaluation Points)	Remarks
		A	B	C	D		
Food, Beverage, Feed							
Live-stock products	201	-	1	1	-	2	* Numerals in the column show the number of corresponding businesses. * The evaluation point represents the point of origin.
Vegetables canned	203	1	-	-	-	3	
Seasonings	202	1	-	1	-	2	
Bakery & Confectionery	-	-	-	-	-	0	
Oils & Fats	200, 207	-	2	-	-	2	
Miscel. food	209	-	-	-	2	0	
Soft drinks, Carb. wat.	208	-	1	1	-	2	
Alcoholic beverage	208	-	-	-	-	0	
Tea & Coffee	209	-	-	-	-	0	
Ice	209	-	-	-	-	0	
Textile & Apparel							
Spinning mills	-	-	-	-	-	0	
Twisting & Bulky yarns	228	-	-	-	2	0	
Woven fabric mills	220, 221, 222, 223, 224, 229	-	7	2	5	2	
Knitting mills	225	-	2	1	3	1	
Outer garment	231, 233, 236	-	2	-	4	1	
White shirt, underwear	232, 234	-	-	1	-	1	
Fur apparel & accessor	237	-	-	-	-	0	
Hats, Miscel. fabricated tex.	235, 238, 239	-	1	1	2	1	
Lumber & Furniture							
Millwork, Plywood	243	-	-	-	1	0	
Wooden containers	240, 244, 245, 249, 250, 253, 259	-	-	6	5	1	
Furniture & Fixture	251, 252	-	1	1	-	2	
Religious furniture	259	-	-	1	2	0	

Type of businesses in Japanese codes	SIC code	Evaluation in Chapter 6				Evaluation in Chapter 7 (Evaluation Points)	Remarks
		A	B	C	D		
Paper							
Coated & glazed paper	263, 267	1	-	-	-	3	
Paper products	267	-	1	1	-	2	
Paper containers Miscel. pulp, paper	265, 267, 269	-	1	1	3	1	
Publishing, Printing							
Newspaper	271	-	-	-	-	0	
Publishing	272, 273, 274	-	-	-	-	0	
Printing	270, 275, 276, 277	-	-	1	2	0	
Plate making	-	-	-	-	-	0	
Book-binding, Print mat	278	-	-	-	-	0	
Chemical							
Oil & Fat prod., Soaps	284, 285	2	5	-	3	2	
Drugs & Medicines	283	-	-	2	-	1	
Miscel. chemical	280, 289	1	3	2	1	2	
Paving materials	290, 299	-	2	-	-	2	
Plastic							
Plates, bars, rods, tubes	308	-	1	-	-	2	
Films, sheets	308	-	-	1	1	1	
Indust. plastic prod.	308	-	-	1	1	1	
Foamed & reinforced	308	-	1	-	-	2	
Compounding pl. mater.	282, 308	-	-	1	1	1	
Miscel. plast. prod.	308	-	-	1	1	1	
Rubber products							
Rub. & plast. Footwear	302	1	-	-	-	3	
Rubber belts & Hoses	305	-	1	-	-	2	
Miscel. rubber prod.	300, 301, 306	-	1	2	3	1	

Type of businesses in Japanese codes	SIC code	Evaluation in Chapter 6				Evaluation in Chapter 7 (Evaluation Points)	Remarks
		A	B	C	D		
Leather							
Industrial leather product	-	-	-	-	-	0	
Boot, Shoe stock, Find.	313	-	-	1	-	1	
Footwear	314	1	1	1	1	2	
Gloves & Mittens	315	-	-	-	1	0	
Handbags	316	-	-	-	1	0	
Luggage	317	-	-	-	1	0	
Miscel. leather prod.	310, 319	1	1	-	1	1	
Ceramic, Stone							
Glass	321, 322, 323	1	-	1	1	1	
Structural clay	325, 327	-	1	-	2	1	
Pottery	326	-	-	-	1	0	
Abrasive	328	-	-	-	-	0	
Aggregate and masonry product	328	-	-	1	-	1	
Iron, Steel							
Steel forgings, casting	330	-	1	-	-	2	
Iron castings	332	-	-	2	-	1	
Miscel. iron & steel	330, 339	-	-	3	3	1	
Nonferrous metals							
Electric wire & cable	339	-	-	1	1	1	
Nonferrous foundries	336	-	-	-	1	0	
Miscel. nonfer. metal	339	-	-	1	1	1	
Fabricated-metal							
Tableware, Cutlery	341, 342	-	-	3	1	1	
Constructional	343, 344	-	4	2	1	1	
Metallic product	346	-	1	-	2	1	
Powder metallurgy	347	-	1	-	1	1	
Fabricated wire	349	-	5	-	5	1	
Bolts, nuts, rivets	340, 345	-	-	1	-	1	
Miscel. fab. metal prod.	349	-	5	-	5	1	

Type of businesses in Japanese codes	SIC code	Evaluation in Chapter 6				Evaluation in Chapter 7 (Evaluation Points)	Remarks
		A	B	C	D		
General machinery							
Boilers, Engines	351	-	-	1	1	1	
Agricultural machinery	352	-	-	-	-	0	
For construction	353	-	1	1	3	1	
Metal working machinery	354	1	-	-	1	2	
Textile machinery	356	-	1	2	-	1	
Special ind. machinery	355	-	1	2	-	1	
General ind. machinery	356, 358	-	1	2	1	1	
Office, service ind. machine	357	-	2	4	2	1	
Miscel. machinery	350, 359	1	4	3	6	1	
Electrical machinery							
Generating, Transmiss.	361, 362	1	6	3	2	2	
Household appliances	360, 363	3	5	2	2	2	
Communication equip.	365, 366	-	1	3	1	1	
Data processing machinery	357	-	2	4	2	1	
Electronic equip.	365	-	-	1	-	1	
Measuring instr.	369	-	-	-	-	0	
Parts for elect. appl.	367	1	2	3	1	2	
Miscel. elect. mach. equip.	369	1	1	3	1	1	
Transportation equipment							
Motor vehicles	371	2	1	2	1	2	
Railroad equipment	374	-	-	-	-	0	
Bicycles & parts	375	-	-	-	-	0	
Aircraft & parts	372	-	-	-	-	0	
Miscel. transportation	370, 376, 379	-	-	1	2	0	

Type of businesses in Japanese codes	SIC code	Evaluation in Chapter 6				Evaluation in Chapter 7 (Evaluation Points)	Remarks
		A	B	C	D		
Precision instruments							
Measuring, analytical	381	-	-	-	-	0	
Surveying inst.	380, 382	-	4	1	-	2	
Medical inst.	384	1	1	3	-	2	
Physical & chemical	381	-	-	-	-	0	
Optical inst. & lenses	385, 386	-	-	1	3	0	
Ophthalmic goods	385	-	-	1	2	0	
Watches, clocks	387	1	-	2	-	1	
Others							
Precious metal prod.	391	-	-	-	-	1	
Musical instruments	393	-	1	-	-	2	
Toys & Sporting goods	394	-	1	-	1	1	
Pens, Stationary	395	-	1	-	2	0	
Ind. not classified	399	2	1	-	1	2	